THE ART OF WARRE, OR Militarie discourses

¶ *Of leavying, marching, encamping; and embattailing an armie.*

¶ *Of building, defending, and expugning forts and fortified cities.*

¶ *Of ordinance, petards, and fireworks.*

¶ *Of the severall duties of officers, and souldiers.*

¶ *Of the Grecian, and Romane* Militia, *and forming of battaillons*; &c.

BY

The Lord of PRAISSAC.

Englished by I. C.

---

[o]

CAMBRIDGE:

Printed by ROGER DANIEL, Printer to that famous UNIVERSITIE.

1639.

This tranſlation (intituled The Art of Warre, or Militarie diſcourſes by the Lord of Praiſſac) *may be imprinted.*

ARUNDEL *and* SURREY.

Imprimatur Cantabrigiæ.

Ra. Brownrigg *Procan.*
Sa. Collins.
L. Chaderton.
Tho. Bachcroft.

TO THE RIGHT HONOURABLE HENRIE Lord MATRAVERS, Lord Lieutenant of his Majeſties forces in Norfolk and Norwich.

RIGHT HONOURABLE,

IT was the opinion of *Cato, Vel otii noſtri reddendam eſſe rationem*; In conformitie whereunto I have lately ſpent ſome idle houres in bringing noble *du Praiſſac* to ſpeak Engliſh. An excellent principall, as your Lordſhip (who are no ſtranger to the forrain tongues) will doubtleſſe judge it, though but meanly coppied. Such as it is your Lordſhips many and continued favours, do embolden me (in all humble ſubmiſſion) to preſent it to your Lordſhip, and with it the bounden and dutifull ſervice of

your Honours

devoted and obliged ſervant

JO. CRUSO.

TO THE GENTLEMEN O
the *Artillerie* and *Militarie companies* in
this kingdome, and particularly of
that in *Norwich*.

GENTLEMEN,

I *Here present you with the excellen*
cies of the Lord of Praiſſac, *toge*
ther with mine own imperfections
For the exerciſing of a Compa
nie *in their* poſtures *and* motions, *and*
diſpoſe that (or perhaps a regiment) *into va*
rious forms of battalia, *as there are diver*
helps *extant (beſides your commendable* pra
ctice) *ſo doubtleſſe moſt of you have attaine*
to very good perfection therein: yet I aſſu
my ſelf, your vertuous emulations will n
ſuffer you to ſtick there, but will kindle a plu
oultre *in your heroick breaſts; eſpecially whe*
you ſhall here ſee that you have much more t
do, and that a ſouldiers Gammaut *goes far*
beyond E-la.

Theſe are times of action, *and require eve*
ry true hearted ſubject to imploy his talent fo
his Majeſties ſervice and the publick ſafety
If theſe my poore endeavours may afford bu
the leaſt furtherance thereunto, and my goo
intentions receive but a courteous acceptanc
at your hands, I have my deſires; and reſt

Your ſervant

I. C

The ſubject of the book.

The ſubject of this book is the Art of Warre, which hath two parts, Preparation and action.

Preparation there muſt be of men, money, inſtruments, and victuall.

The action is performed in the field or in fortreſſes.

That which is performed in the field, conſidereth the marching, encamping, and embattailing of the armie.

And that of fortreſſes conſidereth their fabrick, guard, expugning, defence, and releef.

The generall heads have their particular dependences, being the common practices which are daily obſerved; as the examples, the figures, and the chapters following do ſhew.

A table of the chapters.

Chap. 1 *How a Prince is to prepare himself to make warre, to raise an armie, and the manner of marching.* pag. 1

2 *Of encamping the armie.* 15

3 *Of embattailing the armie.* 26

4 *Of the building of forts.* 31

5 *Of the defence of fortresses.* 48

6 *Of the taking of fortresses by petard, or any other surprise, or by treacherie.* 50

7 *How to besiege and expugne cities.* 61

8 *Of taking fortresses by famine.* 82

9 *Of the defence of fortresses against the petard, and other surprises and treacheries.* 85

10 *Of the defence of fortresses against sieges.* 91

11 *Of the defence of fortresses against famine.* 102

12 *Of releeving places besieged.* 103

13 *Of Artillerie, the foundings, mixtures, and measures of ordinance.* 104

14 *Of the offices of militarie men.* 123

15 *Of fireworks.* 150

16 *Of the militia of the Grecians.* 158

17 *Of the Roman militia.* 185

18 *Of the forming of battaillons.* 196

How

How a Prince is to prepare himſelf to make warre, to raiſe an armie, and the manner of marching.

Chap. I.

A Prince being reſolved to make warre (be it offenſive or defenſive) ought to make ſuch proviſion of men, inſtruments, money, and victuall, as he ſhall know to be neceſſary for his enterpriſe.

In making his proviſion of men, he is to chooſe ſuch as are fit for counſell, for command, and for ſouldierie.

For his counſels, ſuch whoſe age, prudence, experience and ſtudy renders capable of ſuch imployments.

For commanders in his armies, he is to chooſe men of authoritie, reſpect, prudence, experience, and good fortune. Each of them having made ſuch proof of their courage, ſufficiencie, and good ſucceſſe in their ſeverall charges, as it be apparently known to all men; chiefly chooſing ſuch as are born courageous, and are habituated in all the exerciſes of warre: as, to handle all ſorts of armes, to know all manner of militarie motions, to form all ſorts of battaillons, to range armies in battalia, to make them march, encamp, embattaile, to erect fortifications, to aſſault places of ſtrength, and to defend them, to make the trenches, and place the batteries; briefly, that they know all the functions of warre.

For ſouldiers (whether they be Infanterie or Cavallrie) they ought to be elected, ſuch as are ſtrong, ſtout, and of fitting yeares, giving them ſuch armes as are moſt fitting for them; and diſciplining them.

For the politick part, that they be ſober and continent in their ſuſtenance, abſtemious from play and women, modeſt in their ſpeeches, apparell, and all other actions.

Concerning the militarie part, they are to be inſtructed in the uſe and exerciſe of the ſword, musket, and pike; and to be taught how to encamp, entrench, and make their huts, how to keep themſelves in order, and to be expert in all motions requiſite for the forming and ready dividing of ſuch forms as ſhall be deſired. To this end the Captains, Lieutenants, and Enſignes ought to be very carefull to inſtruct and diſcipline their ſouldiers.

The militarie diſcipline for the foot is this. The musketiers ought to be exact in the uſe of their musket and reſt together, to ſhoulder properly, to make ready, and preſent all after one and the ſame manner, whether it be upon entring into the guard, to paſſe a muſter, or to go to the charge; To give fire, either by themſelves, by files, by ranks, or in a volly. The pikes to ſhoulder (aſloap and levell) advance, trail, charge to front and rear; And both pikes and muskets, how to wear their ſwords, how to keep their ranks and files, to take their diſtances, both for muſter and fight; To uſe their motions, to the right, left, and rear; To double, open, cloſe, and to reduce both files and ranks; to countermarch, and wheel.

A. *A calliver ſhouldred.*
B. *A calliver firing.*
C. *A musketier ſhouldred.*
D. *A musketier firing.*
E. *A pike ordered.*
F. *Advanced.*
G. *Shouldred levell.*
H. *Sloaped.*
I. *Charged.*
K. *Trailed.*
L. *Charged at foot.*
M. *Charged to the rear.*

The French continued the calliver longer then other nations.


A
C
D
E
F


G
H
I
K
L
M

Concerning the horſe, they ought to be ſtructed how to manage their horſes and arm Their horſes to the right and left, to advance, ſt retreat.

Their armes, how properly to put on wear their defenſive ones; and to make good of the offenſive, as how to charge and pre their carbines and piſtols, and to finde out the armed parts with their ſwords.

A troop of horſe being to be muſtered, ma eth three in rank; but to be embattailed, it o to be ſo diſpoſed, that for every three in rank t be one in file, ſo that a troop of 108 horſe have 18 files and 6 ranks.

. The diſtance of ranks ought to be (both for length of the horſe, as for the ſpaces betw them) of ſix [a] paces, and of files one pace.

[a] *Paces here are to be underſtood ſteps, and not geometricall paces of 5 foot.*

To make one groſſe of many battaillons, troops ought to be ordered into ſo many ran the flank of the battaillon ſhall be intende contain horſes, and then to draw up the tro flank to flank.

The proviſion of inſtruments of warre is p cipally of armes and horſes; Of armes both fenſive and defenſive.

Of offenſive, as Artillerie, muskets, carbi piſtols, pikes, halberts, partiſans, half-pikes.

Of defenſive, as head-pieces, caſques, gorg cuiraſſes, pouldrons, vanbraces, corſlets, taces, gets, &c. And of draught horſes in abundance the train of the Artillerie, munitions, and ctuall.

The proviſion of money is to be made by a thering of it together long before hand in the m abundant meaſure that may be; by the preſen

it diligently without imploying of it upon vain
unprofitable things; and by distributing of it
ere it shall be found necessarie; and in needfull
ings not to be niggardly.

The provision of victuall consisteth in the col-
tion and duration of it, the conservation and di-
bution.

Having made all these preparations, and filled
magazines, there must be choice made of some
e, there to make the staple of amunition, to
the train of Artillerie in equippage, and there
take the muster of the armie, as well of the In-
erie and Cavallrie, as of the Artillerie; there
o to put the armie into form of battaile, even
if they were that day to fight with the ene-
e.

The manner of ordering the armie for combat,
according to that which the Generall shall in-
d to execute; as to go and conquer a countrey,
releeve a place besieged, to give battaile, to
rch crosse through an enemies countrey, or to
ke a retreat.

If he purpose to conquer a countrey, he ought
know the estate of the same, as whether it
well peopled or not; whether he might
opposed by one or more armies, and what
nner of ones; to know their alliances, and the
ans how to break them, or at least to hinder
m from joyning together, if it be possible;
know the passages, their places of entrance
issuings out, the woods, mountains,
aits, ports, keyes, bridges, havens;
situation of their cities and places of
ength, their garrisons and munitions. He
ght to be informed of the fertilitie of the

coun-

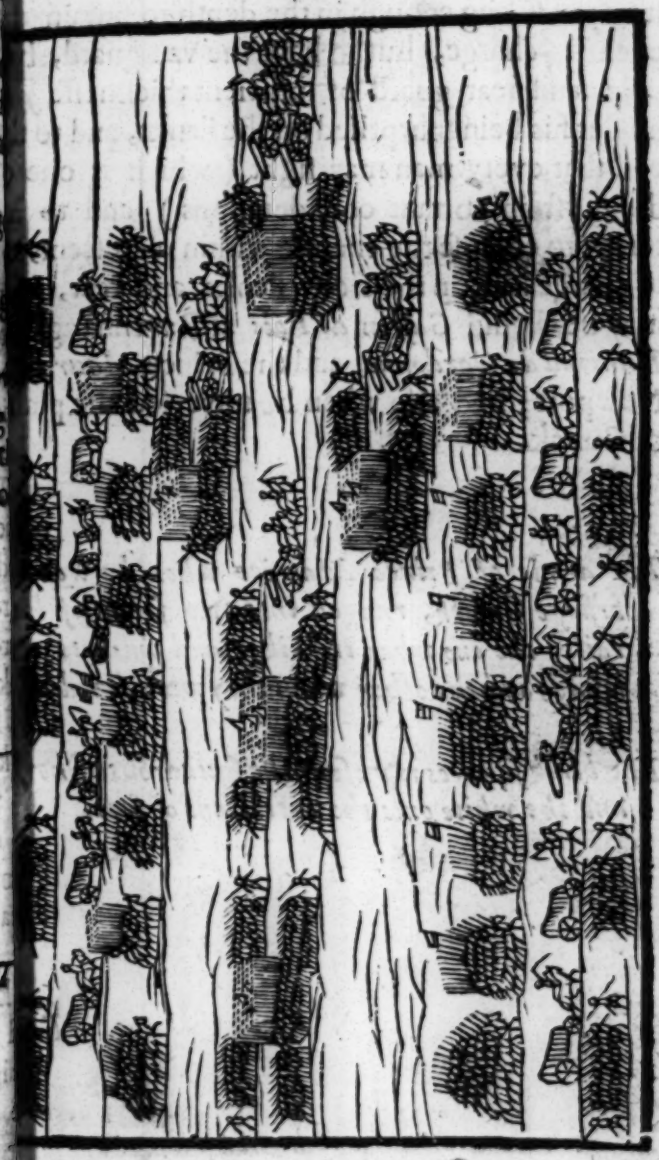
countrey, to cauſe victuall to be carried thithe
it be barren, or to diſcharge his armie of that t
if it abound.

He is to have the plat of the countrey in a ge
rall map, and alſo in many particular ones,
know the ſituation and diſtance of places,
whether the countrey be plain and even, or
contrary, and to judge by the capacity of the pl
what front he may give to his armie.

If his deſigne be to releeve ſome beſie
place, and to convey ſupplies within it, and
effect that) deſireth to force a quarter, he ou
not to ſpread out the wings of his armie, bu
keep himſelf ſerried cloſe, as did Prince *Mau*
when he releeved Coevorden againſt the King
Spains army conducted by *Verdugo*; and
Marquis *Spinola*, when he went to releeve Gr

The armie of the Marquis Spinola when he marched to releeve Groll.

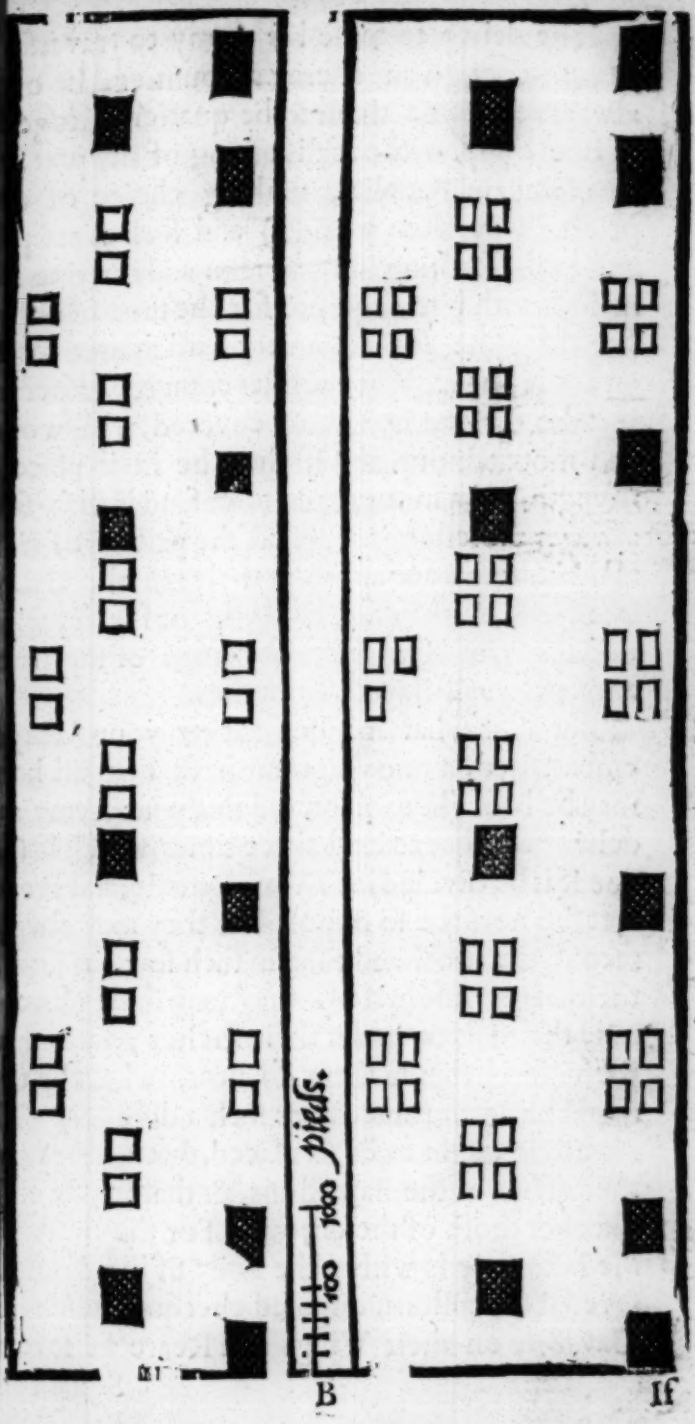
Front.



If he intend to deliver battaile to his en
(the occaſion offering it ſelf, and the countre
ing fit for it) he ought to extend the front
armie as much as may be (yet not ſo much
it be not ſtrong enough in the depth to ſuſtai
enemies charge, but to have the van-guard,
taile, and rear-guard of ſufficient thickneſſe
hinder his being ſurpriſed on the flanks, and
end that every man may fight (which is o
the moſt important conſiderations) and t
tempt to encloſe the enemie within a creſcen
to charge him on the front, flanks, and rear,
may be, as did *Gaſton de Fois* at Ravenna a
Raimond de Cardonne, and the Prince *Maur*
Newport; and alſo when he traverſed the
of Gulick.

*The armie of Prince Maurice when he we
beſiege Gulick, ranged into two forms of
taile, the one when the pikes and muskets
joyned, and the other when they were divid*

*The black ſquares repreſent the ſquadrons of
and the white ones the battaillons of foot.*



You may see this figure more largely and more exactly in my book of Cavallry, in figure 16.

If he desire to cause his Army to traverse qua
march through an enemies countrey, he ou on
alwayes to cause them to be quartered toget rm
in one body, without disuniting of any part, a T
to march in Battalia, making choice of op re
places (free from woods) and such as are pl lia
and even, securing his quarters, and carrying if th
nitions with him, requisite for the time of his ung
sing through: for it is a very hard matter to it
an armie through an enemies countrey, especi e
if it be divided by rivers, covered with woo nan
and mountainous, and if there be in it places ow
strength, and a mean armie to defend it self; for he
alwayes molests you, cuts off the passage of vic In
all, hindreth your armie in their march, alwa nd
troubleth them on the Flanks or Reare, wa ne
upon advantag s, seeks occasions of surpris ng
and continually layeth ambushes. lan

But after what manner soever your Army hir
embattailed, a care you must have that all ha ror
may be brought to fight, and that your Army hir
deliver combat at least three times, which it sh e
doe if it be divided into Van, Battaile, and Rea ers
Let the horse be so disposed as they may alwa ne
second the foot, and that in such sort, as findin t
themselves disordered, they may finde place he
rally themselves under their shelter; having nuc
Battaillon behinde them so near, whereby th ea
might be again routed after such a disorder. Tor
Artillerie ought to be so placed, that it hinder ne
the passage of the Battaillons, & that it may ea en
discover those of the enemie. For the most p
the Infanterie is within the body of the Armie
severall Battaillons, disposed checquer wise: t
Cavallrie on their Wings and Reare in sever

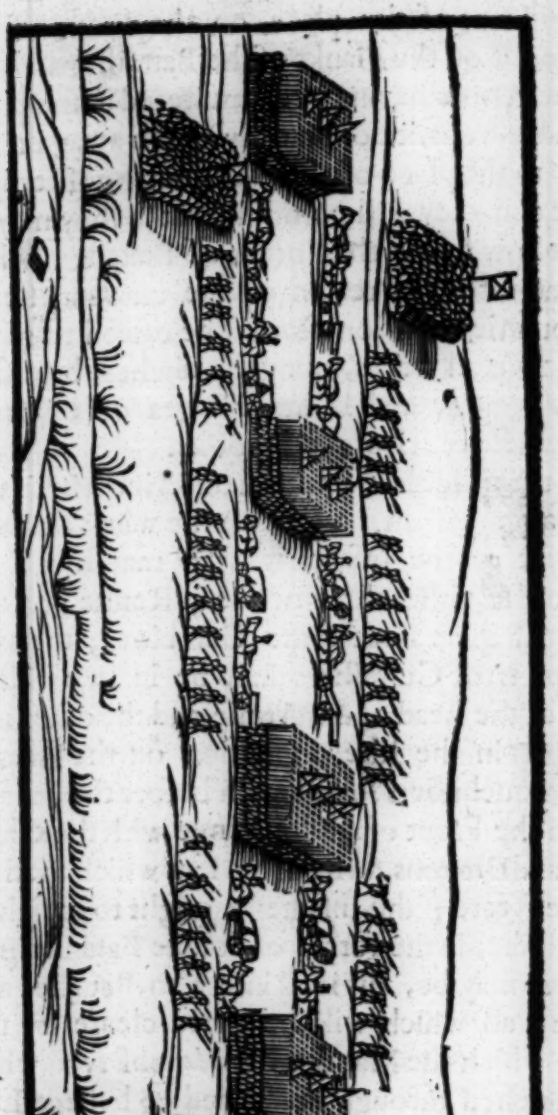
Squadron

quadrons, and the Artillerie according to the nvenience of the place, on the Front of the rmie, or on the Flanks of the Battaillons.

The Armie having been muſtered at the place rendez-vous, it doth uſually march away in Batlia, to the place of their encamping that night if the countrey will permit it) that ſo they may be ught how to march in order of Battaile; which it cannot do by reaſon of the unevenneſſe of e countrie, the Pioners muſt be cauſed to make any ſeverall wayes, filling the ditches, breaking own hedges, and laying bridges of boats or herwiſe over rivers and brooks.

In the middle-way the Artillerie, Munition, nd Baggage ſhall march; on the wings of theſe ne part of the Infanterie is to march in their ng order, either three or five in Ranke; on the lank of theſe Foot ſome Carabines; the two ird parts of Cuiraſſiers ſhall be in two Squarons at the head of the Armie, and the other one ird part in the like diſpoſition on the Reare; e Harquebuſiers ſhall march before the Cuiraſers in the Front of all the Armie with the Carabines and Dragons, ſaving ſome few which ſhall be n the Reare; the Infanterie ought to march in e middle, in the forme of double Battaillons as uch as may be, divided into Van, Battaile, and eare: all which will be more cleare by the orme which the Marquis *Spinola* obſerved when marched through Freeſeland to beſiege Linen, whereof the figure followeth.

Front.



If the enemie be neare to the place where the armie is to arive, the Marſhall of the Field (having choſen a fit place for the field of combat) gives order for the placing of the Artillerie, diſparteth the quarters and places of the Regiments and Munitions, cauſeth all the camp to be entrenched round about according to the art of fortification. To this end he muſt endeavour to lodge at a ſeaſonable houre, that ſo he may have time to make his retrenchments, to divide the quarters, to place the guards, to ſend out to forrage, to cauſe the huts to be made, to diſcover the actions of the enemie; and to prevent a thouſand inconveniences which the night produceth; diſpoſing all things according to the place and time.

Of encamping the Armie.

Chap. II.

AN Army is quartered in the field or in ſome village: in the field when the enemie is at hand, then muſt it be quartered in Battailons, as if every houre there were occaſion of cambat. Alſo, the lodging in the field is when you lay any ſiege, or when the infection compells you to flee the places of ſhelter, or when the countrey is waſted and without houſes.

The quartering in villages is when the enemie is farre off, ſo as you may have time to put the Armie into form of Battaile in the place of Alarm, before he can be upon your jack.

Whether the encamping be in the field or in the villages, it muſt be commodious and aſſured. It will be commodious if there be abundance of

water, wood, forrage, and capacitie of roome co
venient to lodge the whole armie, and to ma
the Alarme-place.

It will be assured (being in the field) by for
fying the camp round about, by causing it to
well guarded by good Corps-du-guards,
Sentinels within, and Sentinell-perdues witho
having Redouts round about, if the enemie
to be feared, or that he be near. *See the Leag*
of Prince Maurice before Sluys, and before Gra
Fol. 87, 88

It will be assured in the villages when the
larme-place shall front the enemy, being emine
and commanding the ground round about
capable to range the whole armie into order
battaile, fortified by art and nature, commodio
for the advenues and sallies without confusion
the troops; That it be not assaultable witho
great disadvantage to the enemie, being near
the quarters, well defended by Artilleri
and well secured by Corps-du-guards, aswell
Infanterie as Cavallrie.

Concerning the quarters, they must be dif
cult to force and to assault (at lest unawares)
cile to be relieved, and therefore near togethe
fortified, retrenched, and well guarded.

So then, all that is to be considered about th
lodging of an Armie which is to be encampe
for a long time (for, for one night it is one
requisite to make choice of places advantagiou
and such as are strong by nature, or to defen
them by waggons or other meanes of enclosin
the camp) consisteth in the commoditie of
things, namely, victuall, water, forrage, wood,
tuation, and enclosures of the field.

Having

Having regard to the certaintie of victuall and
nitions by not adventuring too farre of; and
aving none of the enemies towns on the Flanks
hich might intercept or cut off your way;
eking out the commoditie of rivers, to be ſer-
d of water to drink, for conveyance, or to im-
le with waggons, and to ſecure the one Flank
the Armie; it being impoſſible to be with-
them, and chiefly good ones.

For theſe reaſons mountainous places are to
avoided, and alſo valleys; the one for the
rrenneſſe, the other for the badneſſe and diſ-
mmoditie of the filthy pooles, and for the bad
re which they cauſe, being crude and foggie.

Regard muſt be had of the abundance, com-
oditie, and certaintie of forrage; for the horſe
ke an incredible waſte, beſides that much is
quired for the Souldiers to lie upon and to
ver their huts with.

Good ſtore of wood muſt be had for fires in
e Corps-du-guards, and to build huts.

A care muſt be had that the place where you
end to encamp be ſmooth, plain, and ſandy (if
may be) farre from any place that commandeth
or if there be any, it muſt be ſeaſed upon and
ken in within the retrenchment, to diſcover and
ommand the champain.

If there be any wood near, you ought to make
e of it and guard it, ſomewhat enlarging the
trenchment, and leaving roome between both,
meet with ambuſhes which the enemie might
y within it.

The forme of a retrenchment of an Armie is
ually ſquare, and the ſides thereof ought to be
rtified by Tenailles, to defend the one by the

other, and ſo to be diſpoſed of, as in giving by night thoſe of the Armie may not hurt e other; making them more or leſſe ſtrong, as enemie is more or leſſe to be feared.

Touching the particular things which c cern the diſparting of the lodgings within the cloſure of the camp, theſe things are to be ob ved;

The retrenchement ought to be in breadth depth two fadomes, and the parapet one fa in height. Round about the inſide of the trenchement there muſt be a ſpace left of [a]4 45 fadomes broad, which is called the Al place, which muſt be ſpacious enough to tain the whole Armie in Battalia.

[a] *The proportion generally obſerved is 200 foot.*

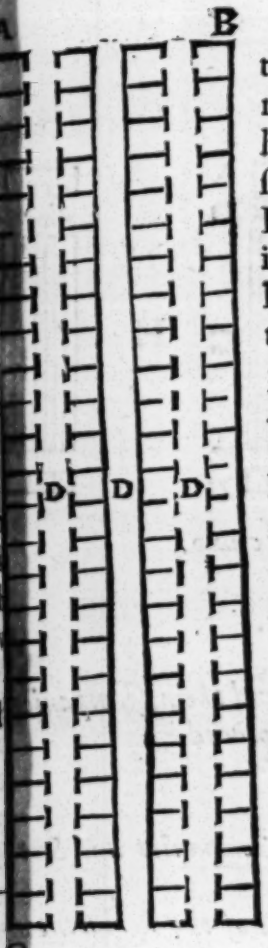
Then follow the quarters of 300 foot [b] d which muſt be divided (for the making of lodgings) after this manner;

[b] *The Authour ſaith 300 foot broad, but that is a miſtake.*

For a Companie of 200 footmen there be 56 foot in Front, and 200 in depth, to mak rowes of huts, 25 in each row: between wh there muſt be 3 ſtreets of 8 foot broad. Ev hut hath 8 foot ſquare to lodge 2 ſouldiers. the doores of them open upon 2 ſtreets, and ſwer juſt over againſt each other.

The quartering of a Foot-companie.

B. The Front of a Companie, is of foure huts.
C. The depth, is of 25 huts.
The ſtreets between the huts.

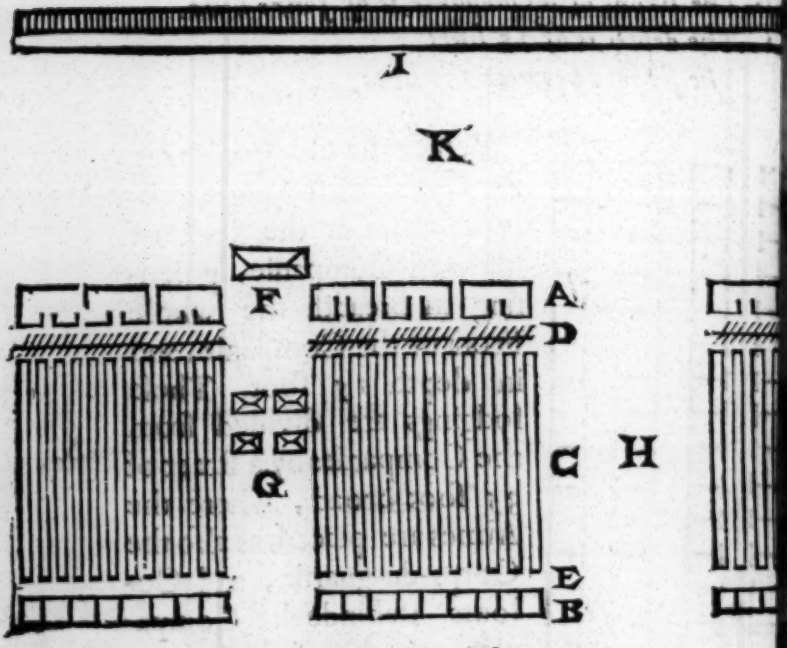


Before the Companies are the Captaines lodgings, every of them at the head of his own Companie, poſſeſſing in breadth the whole Front of the Companie, and in depth 25 foot. Theſe lodgings are divided from the Companies by a ſtreet of 35 foot broad, where the Armes are placed, as alſo the Corps-du-guards, and Colours. Behinde the Companies are the Sutlers huts, containing 20 foot in depth, and theſe are ſeparated from the Companies by a ſtreet of 20 foot broad. The Companies are divided from each other by a ſtreet of 8 foot breadth.

In the middle of the Regiment, there muſt be a place of 80 foot breadth, in Front of which the Colonell is to be lodged, and more inward, the Sergeant Major, Provoſt, and all the Officers of the Regiment. The ſpace between each Regiment muſt be 200 or 300 foot.

The

The quartering of a Regiment of six Companies of foot.



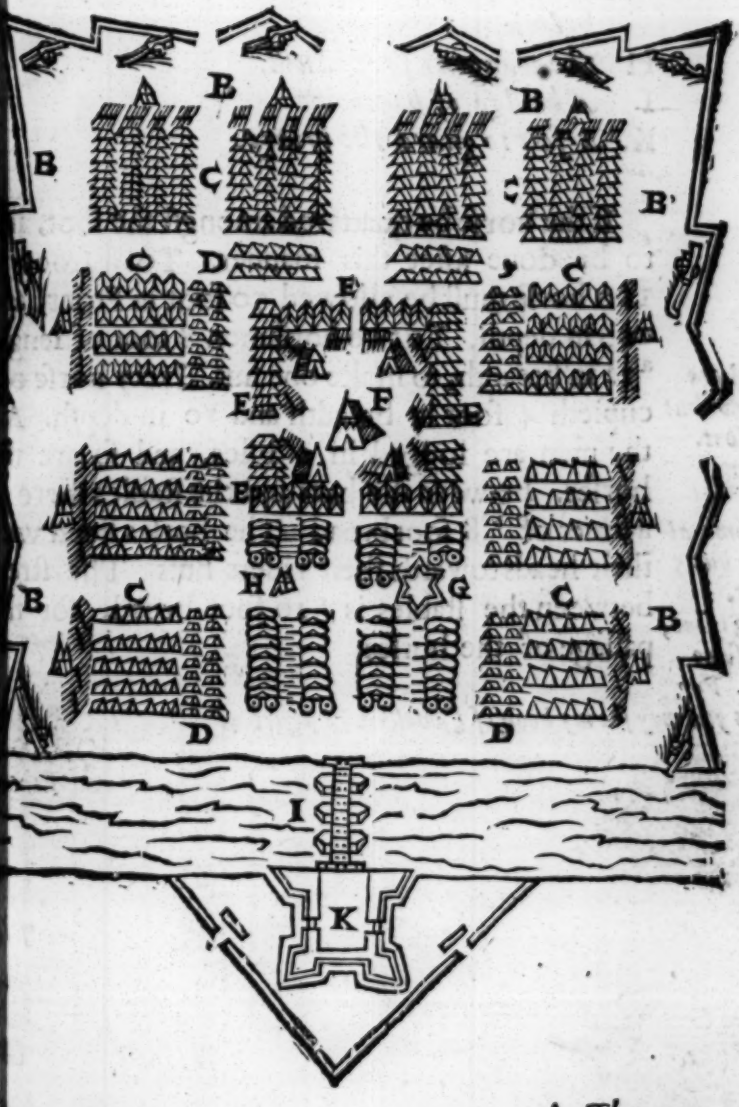
The placing of the Captaines tents at the head of their Companies, is now left off. And they are now in the Reare of them in E. and before the Sutlers: partly for that by this means the Captains can better take notice of, and so remedy the disorders which happen in the Sutlers huts: and that so the accesse to the Alarme-place may be the freer, for that the Captaines tents (taking up the ground before) hindred it.

I. *The retrenchment of the camp.*
K. *The Alarme-place.*
A.B. *The depth of the quarter.*
A. *The Captains lodgings.*
D. *A street between them and their Companies where the Pikes are placed.*
C. *The Companies.*
B. *The Suttlers.*
E. *The street between the Companies and Sutlers.*
G. *A void place in the middle of the Regiment.*
F. *The Colonels lodging.*
H. *A space between the Regiments.*

When

When the Infanterie is quartered alone without Cavallrie, it is disposed as the figure following sheweth.

The Infanterie quartered on the side of a river.



A. *The*

A. *The field of battaile.*
B. *The Alarme-place.*
C. *The huts of the quarters.*
D. *The Sutlers.*
E. *The guards of the Generall.*
F. *The Generals lodgings.*
G. *The quarter for the powder and train of Artillerie.*
H. *The waggons for victuall.*
I. *A bridge of boats.*
K. *A fort to guard the bridge.*

If the horſe be quartered amongſt the foot, to be done after this manner. To a troo 100 horſe muſt be allowed 70 foot in Front, 200 in depth. To two horſemen 8 foot of le [a] 12 in breadth, to make one hut. Every horſe cupieth 4 foot in breadth and 10 in depth. the men are lodged in 2 Files, and ſo are horſes. Between the huts and the ſtables ther a ſtreet of [b] 8 foot broad. The horſes ſtand v their heads towards their riders huts The ſt between the ſtables is [c] 10 foot broad, for paſſage of the horſes.

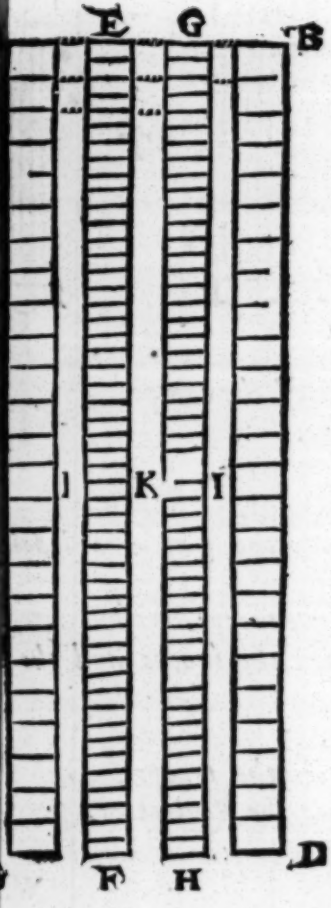
[a] *Others allow but 10 foot.*

[b] *Some allow but 5 foot.*

[c] *13 foot, as ſome ſay. For this you may ſee my book of Cavallrie in figure 4.*

The quartering of a troop of 100 horſe.

. The Front of the troop.
. The depth.
. and B.D. The ſouldiers huts, 25 in each file.
and G.H. The 2 rowes of ſtables, each of them for 50 horſes.
Is the ſtreet between the ſtables.
Are the ſtreets between the huts and the ſtables.

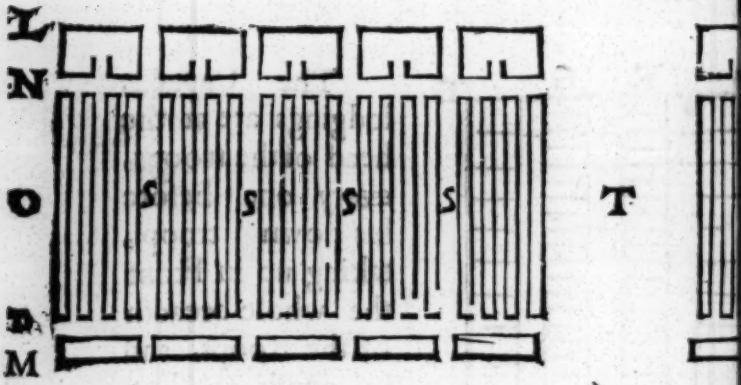


The Captains lodgings are at the head of the troops, every one before his own troop, taking up in Front the whole breadth of the troops, and in depth 40 foot. Betweene theſe lodgings and the troops there is a ſtreet of 20 foot breadth. Behinde the troops are the Sutlers huts, of 20 foot deep, ſeparated from the troops, by a ſtreet of 20 foot broad.

The diſtance betweene each troop is 20 foot.

The

The quartering of a Regiment of five troops of horse.

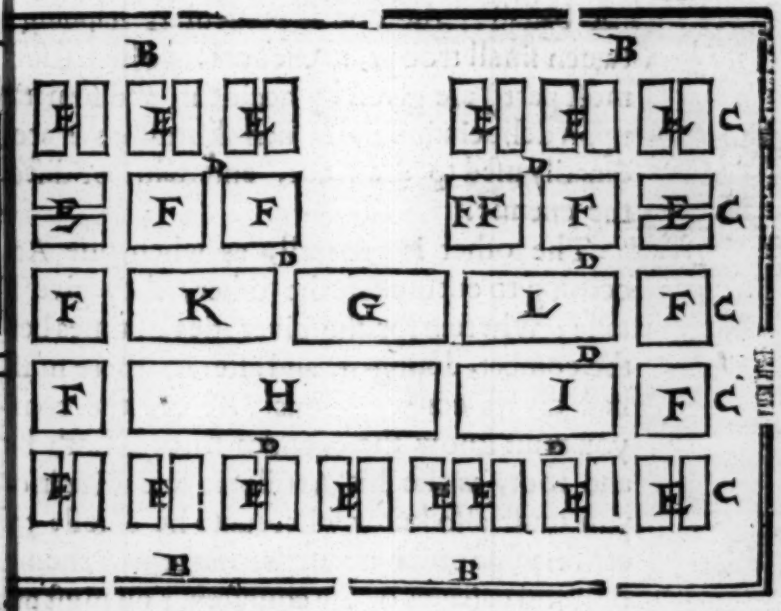


Q. *The retrenchment of the campe.*
R. *The Alarme-place.*
L.M. *The depth of the quarter.*
L. *The Captains lodgings.*
N. *The ſtreet between the Captains lodgi and their troops.*
O. *The lodgings of the trocps.*
P. *The ſtreet between the troops and the tlers.*
M. *The Sutlers huts.*
S. *The ſtreets between the troops.*
T. *The ſpace between the Regiments.*

When the horſe and foot encamp together, y are diſpoſed of as the figure following de-nſtrateth.

t ſeldome happeneth that they are quartered ether, by reaſon of the great annoyance which Cavallrie bringeth to the Infanterie.

A quarter of Infanterie and Cavallrie, fronting every way.



The Alarme-place.
The quarters.
The ſtreets between the quarters.
The Regiments of foot.
The Regiments of horſe.
The Generall of horſe.
The Generall of the Armie.
The quarter for the Artillery, and the Generall thereof.

I. *The*

I. *The quarter for the Commissarie General of the victuall, and his train.*
K. *Lodgings for Strangers.*
L. *The Market and Shambles.*

Of embattailing the Armie.

Chap. III.

There be two kindes of occasions of giving battaile; the one is particular, hapning between small troops, as encounters which (for the most part) are given by accident, and sometimes upon deliberation; also such skirmishes as are ordinarily used to draw out, entertain, or discover the enemie.

The other is generall, as when one Army coming to encounter the other, they give battaile; wherein for the diversities of times before the combat, during it, and after it, there must be had divers considerations. Before the conflict you must know the enemies forces, both horse and foot, as also his Artillerie and Munition: you must also know whereunto he chiefly trusteth, in what order he useth to fight, also the situation and passages of the countrey. You must use diligent discoverie of his designes and actions by your own spies, or the enemies, being corrupted with money or promises.

You must attempt to divide his forces, to breed jealousies and diffidences between his chiefs, and between them and their officers, to incite his soldiers to mutinie.

You must strive to seize upon the most advantageous ground to range the Armie into Battaile

ing regard to the winde to avoid the duſt and
ak, and to the
e, that you be not dazled: directing your
according to the place, and the number of
r own and the enemies forces.

The ſouldiers muſt be deprived of all hope
aving themſelves by flight, and muſt be
ught to a diſpoſition to fight courageouſly;
pounding to them the glorie, the bootie, the
mpenſe, and the neceſſitie.

The order which muſt be obſerved in ranging
Armie for [a] combat hath been ſhewed in the
chapter, being the ſame as the march in bat-
.

The Artillerie muſt play ſo ſoon as they be-
to diſcover the battaillons of the enemie,
ing the batterie fitly and ſpeedily, to diſorder
ſcatter them before they come to give bat-
.

Whileſt the Armie ſtands ranged in battalia, ex-
ing the ſignall for combat, the Marſhalls of
field ought to ride before the Van, to cauſe
n to advance when the fight ſhall begin, ac-
ing to the Generalls order, and to command
battaillons to joyne and charge the enemie,
to receive his charge according to occur-
ces.

The Generall of the Armie by his dili-
ce ought to be as the ſoul in the body
ughout all the members; alwayes obſer-
g the countenance of the enemie, to make
men fight to purpoſe; aſſiſting the broken
aillons by freſh ones, or by ſquadrons,
ordering thoſe which (having been diſ-
ded) ſhall rally again, to ſend them to

[a] *In my book of Cavallrie (before mentioned) you may ſee divers formes of battaile in figure 8,9,10, &c.*

the combat to releeve their fellows. And
cauſe ſuch as have been beaten will hardly
turn to fight again, you muſt not truſt too mu
them.

As ſoon as you be within reach of the Ca
you muſt go on directly upon the enemie, (
leſſe you be ſheltered from his Artillerie) b
means your ſouldiers are encouraged, you a
the danger of the enemies Canon, and you
behinde you the place where your Armie
ranged, which ground will ſerve to rally an
der the Battaillons which ſhall happen t
routed. You muſt not give on ſo haſtily, as
thereby the Battaillons be diſordered; an
the other-ſide you are to uſe a marching pac
till you come within diſtance of a Piſtoll-ſho
then to double your pace and to charge furio
the Pikes being cloſe ſerried, and the Mu
continually playing on the Flanks, having c
Targetteers in Front which may ſhelter the
taillon, and diſorder the enemies Pikes.

You muſt give a ſufficient Front to the Ba
lons, that ſo they may overwing the enemie
charge him in Front and Flank, obſervin
which part the enemie giveth the moſt vi
aſſault, and thither to ſend the troops of Re
as alſo, where he is weakeſt, that there he
be the more eaſily routed; diſſembling and
cealing all ſiniſter accidents; and whatſo
proves proſperous, to cauſe that to be publi
aloud, for the raiſing of their ſpirits which h
ly might be become heartleſſe, either by
much labour, or by the rumour of ſome di
propounding to them the faintneſſe of the
mie, the death of his Commanders, the fig

troops, the ſpoil, the honour of the victorie, the great bootie; Sending the orders and mands by Officers and perſons known, and from hand to hand by *paſſe parolle*.

After the combat, either you are vanquiſher vanquiſhed: If you be vanquiſher, and have cauſe to feare the enemie any more, as being able to rally himſelf, either you content your with the victorie, or you attempt farther to quer.

you reſt content with this victorie, God is mnly to be praiſed, the ſouldiers are to be re- ed, commended, and recompenced, principal- e Chiefs and ſuch as have performed any all acts, ſharing out the ſpoil amongſt them rding to their merits, giving order that the oners be truſtily kept and courteouſly uſed, ing the hurt to be carefully cured and the buried.

you attempt to conquer the enemies coun-, you are to publiſh the victorie, for that will e his confederates to ſhrink from their al- ce, it will affright your enemie, and will make Neuters to declare themſelves for the victour; ill keep your confederates faithfull and con- t, your ſubjects obedient, and will procure fa- r from all men. Then the Armie muſt be ſup- d with men and munitions, the enemies gar- ns muſt be ſummoned, recompenſing ſuch as ll yeeld the places within their cuſtody, deal- rigorouſly with ſuch as ſhall be headſtrong, ning the great ones of the countrey by money, tes, and honour, attempting to ſeize upon the venues and paſſages, and to leave nothing at r back which might hinder the paſſage of

your munitions and victuall. If you be vanquish-
ed, either the enemie gives you time to retreat
or else he pursues you with all his forces. If h
give you time, you must gather together all wha
possibly you can of your broken and scattere
men, making your retreat resolutely and honou
rably, and shewing your self in the field again
soon as may be with the greatest number of sou
diers that can be gotten, to make head aga
against the enemie, to oppose his designes, to di
quiet and molest his actions, to work his conse
derates to oppose him, to divert and divide h
forces, to fortifie the passages, to provide and fu
nish your frontier places with victuall, munitio
and garrisons.

If you be pursued with extremitie, you must r
treat in the best order you shall be able, maki
it appear you are not vanquished in your co
rage, though you be so in your fortunes; causi
all your countrey to take armes, and that such
shall be in armes do present themselves at t
passage to hinder the enemies entrance, breaki
down the bridges and landing-places of river
cutting of the high-wayes, and felling of trees
lay a crosse the high-wayes, breaking down t
sluces, and drowning the countrey, if it be pos
ble, assuring your self of the fidelitie of your c
ties and subjects, the one by forts, cittadels a
garrisons; the other by hostages, offices and ben
fits.

Of the building of forts.

Chap. IIII.

Before the fortifying of any place, conſideration muſt be had of the ſituation: for if it be on a mountain which is all a rock, and that the place comprehendeth all the top, it will be difficult to approach, the flanks will be ſecured, it will be free from mines and command, it will eaſily diſcover round about, it will do horrible execution, and will be wholeſome both for the inhabitants and for the munitions. But ſuch a place hath uſually theſe diſcommodities, want of water and earth, hard to be retrenched, eaſie to be quickly blocked up, and the paſſages and advenues for the releeving of it, eaſie to be cut off.

If it be on a mountain which is not a rock, it will be ſubject to mining, the trenches of approach will be eaſily undermined, and it will have almoſt all the diſcommodities of the place above ſaid; but it will alſo have the advantage of ſtore of earth, and by that means it may eaſily be retrenched.

If the place be ſeated on a mountain which hath one or more advenues which command it, ſuch place will be eaſie to be aſſailed and battered from thoſe advenues.

If the place be mooriſh, the approaches are difficult, but the diſcommodities are great for them within it; for they are ſoon ſhut up, their ſallies are difficult and dangerous, the place is unwholeſome for the inhabitants, the

munitions are ſoon corrupted, and it is hard to releeved.

If the place be on a plain, but commanded one or more hills, it will have an infinite num of diſcommodities, and almoſt no convenience

If it be in a plain which is ſandy, the wo which there ſhall be made will hardly be wo any thing.

But if it be on a plain champain, and levell all ſides, the earth being fat and ſtrong, it will eaſie there to fortifie, and to prevent the diſco modities, having very advantageous conve ences.

But whatſoever the ſituation be, if you inte there to fortifie, you muſt firſt calculate whet your means be ſufficient, whether the ſeaſon firting, whether you have a ſufficient numbe workmen and tooles, time enough to finiſh it fore the ſeaſon change, or the enemie can co upon you; whether you have ſouldiers enou to guard it, ſufficient Artillerie to defend it, n nition enough for the ſouldiers and Artillerie, ctuall ſufficient for the men, and fodder for horſes, ſuccours ſo near as that they may arr within ſuch time as it may be conceived the f may be maintained againſt the violence of t enemie.

If all theſe things do favour you, you m boldly fall to work, having regard firſt to t matter, and ſecondly to the forme.

Concerning the matter, if you have the co moditie of ſtone, brick, and chaulk, you muſt li all the works of the curtains, bullworks, a counterſcarps with good and ſtrong ſloapings, a ter this manner; thoſe of the curtain and cou

terſca

ſcarp have a fourth part of the height for eir ſloap, and thoſe of the faces of the Bullworks hird.

The faces of the Bullworks muſt have ſpurres, n foot diſtant from each other, of three foot ck and 25 foot long, the ſaid ſpurres being ongly bound in with the wall, which muſt be ilt in arches underpropped 6 foot without the ndations onely on the ſpurres.

If you have onely earth, there muſt be ſuch a ap given to the works, according as they are ong or ſandy, ordinarily of 5 foot one. Such orks muſt be well furniſhed with palliſadoes, d environed with water, for they are ſubject to priſes, becauſe the ſhowers of rain and froſts ake them moulder away.

Touching the forme, if it be regular (which is hen it hath the ſides equall) ſuch as the forti- ation of one face is, ſuch are all the reſt. But t be irregular (which is when the ſides be un- uall, as all cities are which are repaired) the tification on all parts muſt be diſagreeing. But hat forme ſoever it hath you muſt obſerve the les following as much as may be, and labour to ake it equally ſtrong on all ſides.

Rules of Fortification.

That the angles or points of the Bullworks which are called angles flanked) be made as great d blunt as may be; for the more obtuſe the anked angles be, the better; and the angles flank- g are the more ſharp.

. B. C. *The angle flanked,*

. C. D. *The angle flanking.*

That the ſhoulders of the Bullworks be made

maſſie enough to reſiſt the violence of the e
mie, and to hinder him from ruining the fl
which they cover; and long enough to co
(in ſight) at leaſt half of the flank of the caſem
when you behold it from the point of the co
terſcarp of the oppoſite Bullwork. The caſe
muſt have of breadth the moytie of the thickn
of the ſhoulder, and the plain of it of 2 foot h
above the plain of the drie moat, or of the
face of the water. The line of the thickn
of the ſhoulder, and of the breadth of the c
mat, is called the line of the flank, and the lo
it is, the better: provided that it bring no diſco
moditie to the other parts.

F. G. *The thickneſſe of the ſhoulder.*
F. E *The breadth of the caſemat.*
E G *The line of the flank.*

That every face of a fortreſſe muſt have t
flanks, that ſo it may defend it ſelf both on
front and on the ſides, and the one by the other.

O. *Is the center of the Bullwork,*
O.P. *A face of the fort.*
H. *Is one flank.*
I. *Is the other flank.*

That the lines of defence be not ſo long, t
they be without the reach of your ſhot; nor
ſhort that the enemie (being lodged on t
counterſcarp) be able with his musket ſhot
beat yours out of your caſemats.

I. B. *and* H. D. *are the lines of defence.*

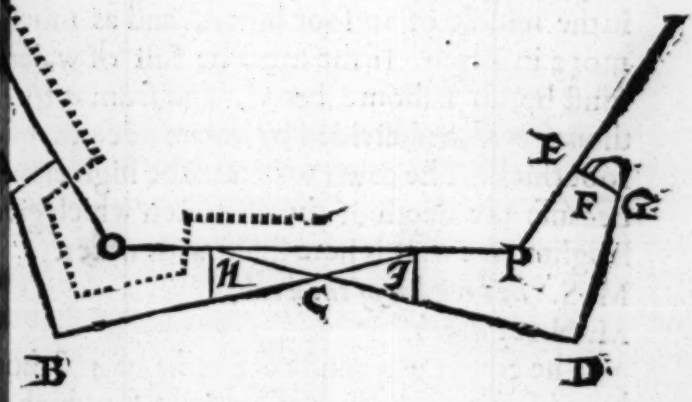
That the Bullworks be large and hollow, cap
ble of divers retrenchements, that there may
formed large flanks, and that they may conta
good ſtore of ſouldiers: for the hollow room

place appointed to fight in, and to bear re-
nchements.

and P. *repreſent the places of the Bullworks.*
The ſallie-ports ought to be placed between
ſhoulders of the Bullworks, and the caſe-
s.

The ſally-port.

B. H.B. I.D. *and* D.G. *the faces of the Bull-
works.*



That the faces of the Bullworks and the cur-
s be ſunk within the moat to the upper line,
that upon this line there be a parapet of 8
t height and [a] 3 foot thickneſſe. Then let the
y for the rounds be 2 fathom broad (therein
ng comprehended the 2 foot-banks of the pa-
et) aſwell of the Bullworks as the curtains.

The upper line or ſuperficies.
The parapet of the curtain.
The way for the rounds.
The foot-banks.

[a] *Three foot for the thickneſſe of the parapet is (ſurely) farre too little. Maroloys and others* 20 *foot. And the Authour himſelf ſayes from* 15 *to* 20 *foot, in the ds following.*

That

That the rampart of the Bullworks be 15 high on the plain of the citie, and that of the tain twenty five, without reckoning the para briefly that it be so high, as it may keep the ho from being battered and ruined. Let their para be from 15 to 20 foot thick, and 8 foot high.

Y. Z. *The height of the rampart of the Bullwo*

Z. θ. *The thicknesse of the parapet.*

The ditches must be from 12 to 16 fatho broad, and from 5 to 6 deep, beneath the co way (being drie) if it may be, having a small d in the middle of 20 foot broad, and as much more in depth. If the moat be full of wate must be 20 fathome broad, and from 4 to thome deep, and divided by a dam of earth o foot thick. The town wall must be high eno because the depth of the drie ditch which gi height to the wall, is here filled with water.

M. S. *The breadth of the ditch.*

M. N. *The depth.*

The covert way must be from 3 to 4 fatho broad, having a parapet of 10 or 12 foot high moytie of it being sunk into the plain.

L. M *The breadth of the covert way.*

K. L *The height of the parapet of the counters*

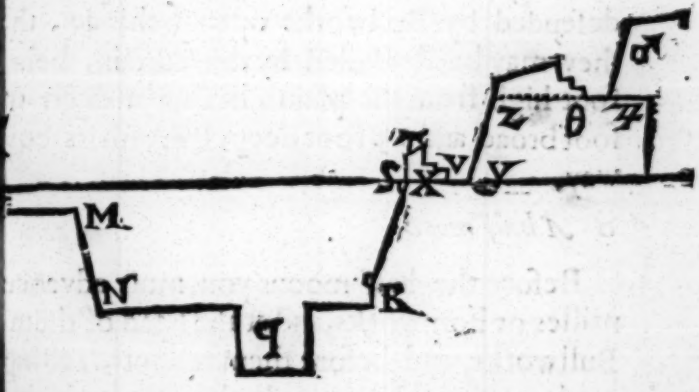
The parapets must be of earth, or of unb brick, except the outward row, which mu of burnt brick, to resist the injurie of weathe

If the curtains be long, there must be a ca lero set on every point; but if they be short th will need but one, which shall be on the mi of them. They must be so high as they may co mand all the works, and the hillocks without there be any, and if it may be. They are comm ly raised 10 foot above the rampart. Their len

aken from the number and qualitie of the Ar-
erie which you would plant thereon ; and
ir breadth dependeth on the length and rever-
of the pieces of Attillerie and of a parapet of
ee fathomes and a half thick.

The height of the cavallero upon the rampart.

The pieces of ordinance nearer to the center
the fort muſt command thoſe which are far-
r off ; raiſing the one above the other from 8
o foot.



That all the walls of the Bullworks and cur-
s turn their Front from the oppoſite places
ch command them, leading them bias-wiſe,
ſo the batterie be not raiſed perpendicularly
n it,and that the bullet may glance by means
the bias and ſloap, and that they be not com-
nded nor ſeen from farre off.

The market place of the citie (or ſuch places
ere the grand watches are kept) muſt be co-
ed in the middle,to ſhelter the battaillons from
rain, and there muſt be pent-houſes along the
ets, which lead to the rampart, to the ſame
.

The

The ſtreets ought to be 6 fathom broad a leaſt, that ſo the waggons and Artillerie may the freelier.

The ſtairs to paſſe to the covert way o counterſcarp, muſt be juſt in the middle o curtain, between the two flanks of the works.

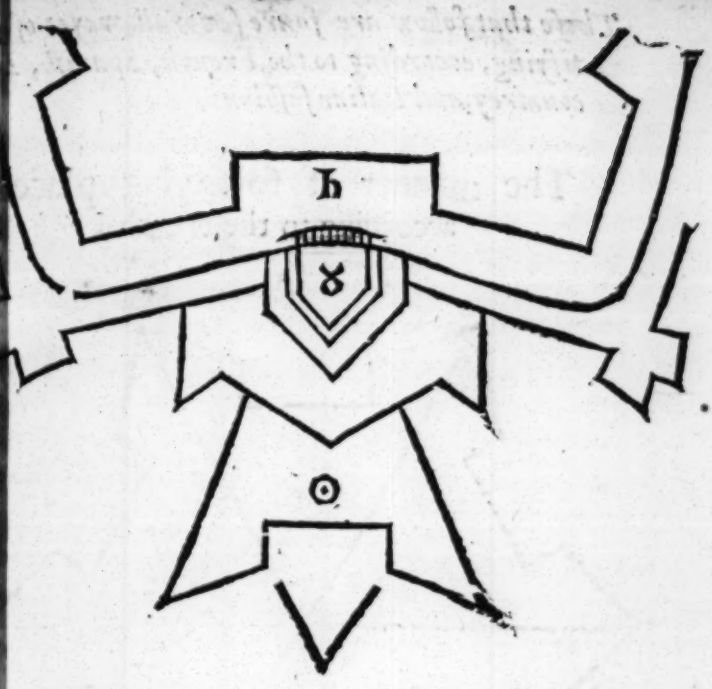
h *Stairs of the counterſcarp.*

There muſt be half moons made on the part of the curtains, right over againſt the an flanking on the counterſcarps; having their defended by Bullworks open behinde, th they may be defended by the curtain, bein foot high from the plain; having a ditch foot broad and 15 foot deep, beneath its co way.

& *A half moon.*

Before the half moons you muſt advanc nailles or hornworks, and at the head of them Bullworks, and before them redouts, caſtin earth on that ſide towards the citie, which ſerve for a parapet. Theſe works muſt be 10 deep and 15 foot broad, and muſt be defe from the citie and from the counterſcarp.

⊙ *Trenches, half bullworks or counterpoints.*

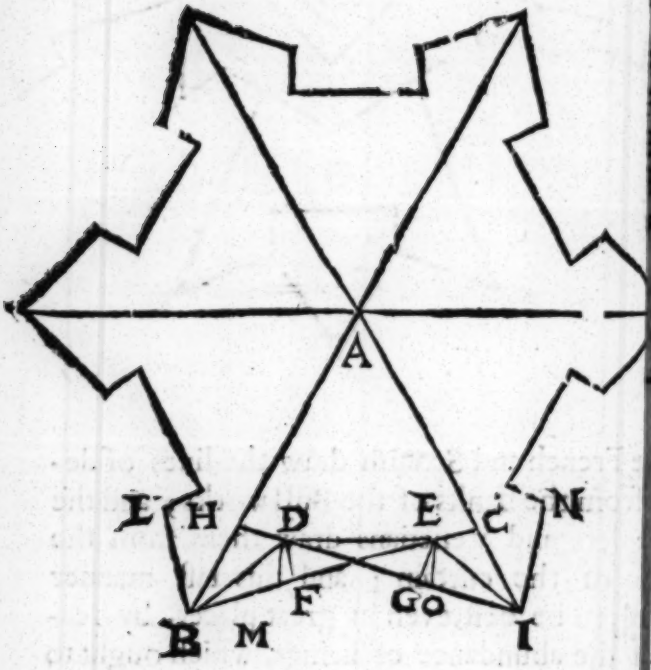


he French and Spaniſh draw the lines of de-
from the flanks of the Bullworks; and the
anders and Venetians draw them from the
le of the curtain; and this laſt manner
eth to be beſt, even in great places, by rea-
of the abundance of firings, which ought to
referred before the form of flanked angles.
he inconvenience of ſuch places as overtop
ommand you, may be remedied, either by
ng them down, ſheltring your ſelf from them,
ſſeſſing and fortifying them by a hornwork
naile, or by two half Bullworks, or by one
work and two half ones, thereafter as they
greatneſſe: at leaſt you muſt be ſheltred from
by good and ſtrong traverſes.

Theſe

These that follow are foure severall wayes of tifying, according to the French, Spanish, countrey, and Italian fashions.

The manner of fortifying place according to the French.



A. B. C. *and* A. I. H. *Are each of them* right angles, *that so you may have* L. B. G. I. N. *right.*

B. D. *and* I. E. *divide the half-right angle* two equall parts.

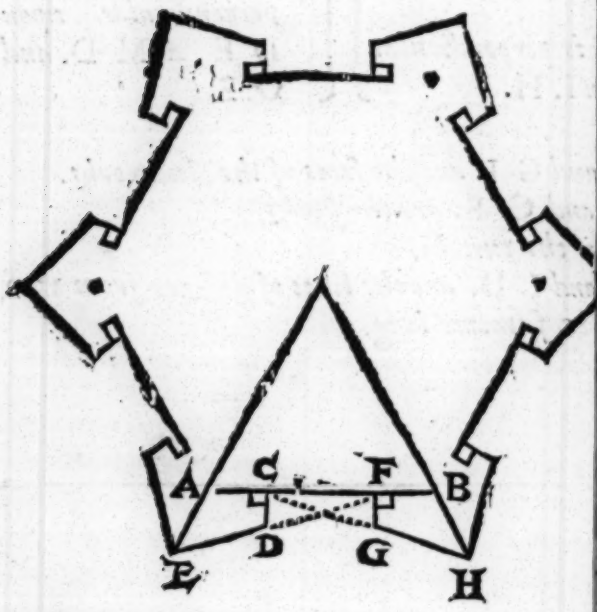
. *is perpendicular* } { *In the figures which*
on B. C. *have leſſe then nine*
ſides: but in thoſe
figures which have
above eight, they are
perpendicular upon
. *is perpendicular* D. E. *As* M. D. *and*
on I. H. } { O. E.

. *and* G I. *are the faces of the Bullworks.*
and G. E. *are the flanks.*
. *is the curtain.*
. *and* I. D. *are the lines of defence, from* 100
120 *fathome long.*

The

The Spaniſh fortifications.

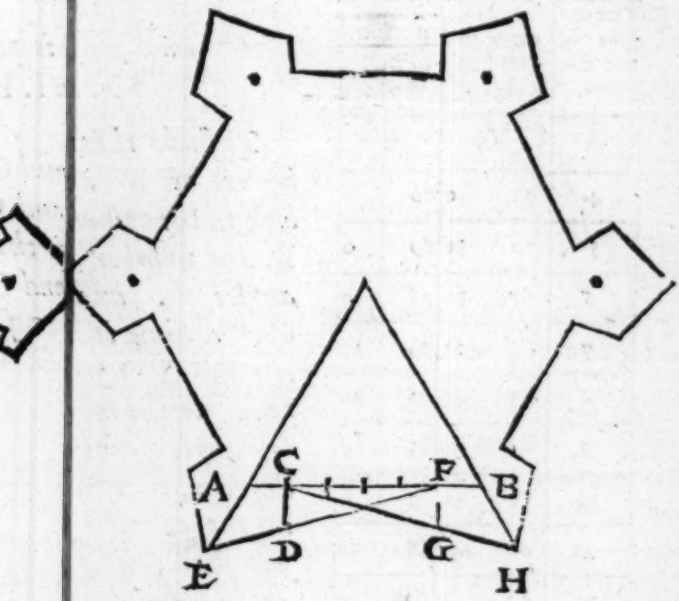
When the Bullworks are made with eares or orillons.



A. B. *Muſt be divided into* 8 *equall parts.*
A. C. *and* B. F. *have each of them two.*
C. D. *and* F. G. *have each of them one.*
E. F. *and* H. C. *muſt be from* 850 *to* 900 *long.*

The Spaniſh fortification.

When the *Bullworks are made without orillons.*



. *is divided into 6 equall parts.*
. *and* B. F. *have each of them one.*
. *and* F. G. *have alſo each one.*
. *and* H. C. *muſt be from* 850 to 900 *foot long.*

Low-Countrey fortification.

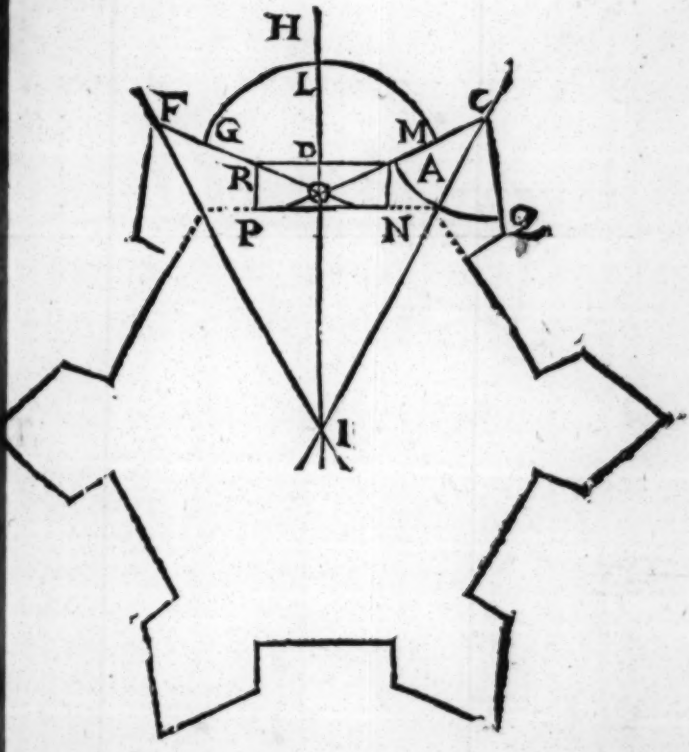
In this table you may finde the quantitie of the angles flanking and flanked, in this manner.

The angles of the figures.	The moitie of angles flanking.	Angles flanked or Bullworks.
A	C	E
4	75 0	60 0
5	70 30	69 0
6	67 30	75 0
7	65 21	79 17
8	63 45	82 30
9	62 30	85 0
10	61 30	87 0
11	60 41	88 38
12	60 0	90 0
13	59 25	91 25
14	58 51	92 9
15	58 30	93 0
16	58 7	93 45
17	57 47	94 25
18	57 50	95 0
19	57 14	95 32
20	57 (	96 (
B	D	F

The best approved Authours (for Low-countrey fortification) as Samuel Marolois, Freitag, and others, dissent much from this table.

To finde them i figure of 6 ang look in the columne B. the number of angles 6. and over against it in columne C D. you finde for the moyti its angle flanking degrees, 30 min. in the columne E you shall finde for angle flanked 75 0 min.

To designe a fortification of 6 Bullworks, w the line H. I. set the compasses in O. d make the semi-circle G. L. M. then mark L. and L. M. each of them of 67 degrees 30 min. n draw the streight lines O. G. and O. M. you ll have the angle flanking G. O. M of 135. deg. after that, make the streight line R. A. which s with right angles the line H. I. (it matters whether it be near or farther off from O.) di- le it into 5 equall parts, and give foure to each the lines R. F. and A. C. which will make the es of the Bullworks. Then divide one face into qual parts, and give two to each of the flanks N. and R. P. which must be perpendicular up- the line R: A. then draw the line P. N. which ll make the curtain.



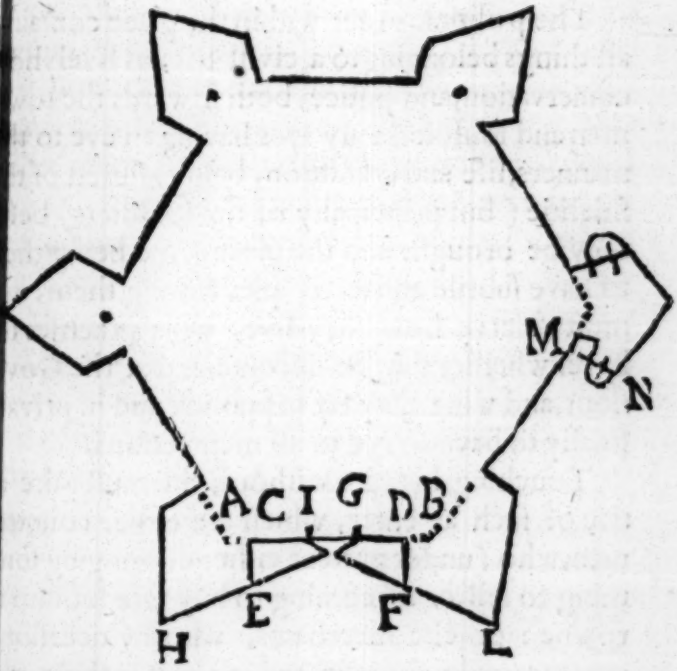
Place the compaſſes on the point C. *make ſemi-circle* A. Q. *of* 75 *deg.* (*as is marked in table*) *then draw the line* C. Q. *and you ſhall the angle of the Bullwork* A. C. Q. *which divided into* 2 *equall parts, by the right line will make in* I. *the center of the place.*

It is a generall rule, that the faces of the works are the foure fift parts of the curtains, the flanks the two fift parts of the faces of the work.

The faces of the Bullworks, in great fig must have 400 *foot; in mean figures* 350, *in ſmall ones* 300. *You may forbear the prec table, obſerving* (*for a generall rule*) *to give angle flanked three fift parts of the angle of cumference of the figure which you intend tifie.*

The Venetian fortification.

The distance of the one Center of a Bullwerk to other A. B. *is never longer then* 200 *Venetian pas, of* 5 *foot a pace: nor shorter then* 150, *that the line of defence be neither too short nor too long.*



B. *must be divided into* 6 *equall parts.*
C. *is the sixth part of* A. B.
E. *is equall to* A. C.
G. *is drawn from the third part of the curtain, in the figures of lesse then* 8 *sides: and from the middle of them in the figures of more then* 7.
N. *divideth it self into* 3 *equall parts, two for the shoulder, and one for the casemat.*

Of the defence of fortresses.

Chap. V.

THe defence of fortresses dependeth on good order which the Governour observ as well within as without the place, be it for ters politick or militarie.

The politick order within the place contai all things belonging to a civill life, as livelyh conservation, and justice, both towards the to men and souldiers: alwayes having an eye to manners, life and condition, being assured of fidelitie (but principally of the souldiers) be they be brought into the place. And being th to have subtile and secret spies among them, must observe how they live, what practises have, whether they be discontented at the Go nour, and what they say in publick and in priv finally to have an eye to all their actions.

Touching his care without, he must take tice of such as enter, which are either count men, who (under pretext either of bringing so thing to sell, or of coming to buy) are let into towne: or else merchants, who by occasio commerce do come in and go out at their p sure. Of these there must be regard had whe they deal with persons suspected, or that th selves be such, or whether they come from s suspected place; and not to suffer any to en but persons of good assurance, and well know

The militarie care hath respect either to gates or the walls. Of the gates, either at opening or shutting of them.

C

Concerning the opening of them, he must (be-
the setting of them open) send out an officer
h some souldiers, to discover whether there
ny ambushes in the suburbs, churches, fields,
ayed buildings, hollow wayes, valleys, ditches,
osed gardens or woods: and at the shutting
hem, the Sergeant Major must be there assi-
g as often as may be, and to search and feel the
kes with his own hands.

Touching the walls, he ought to have regard
ether they be low, ill flanked, decayed, tho
at drie; and to use the remedies; as also to
places where the water entreth, or issueth out.
The gates and walls must be secured with good
ps-du-guards, and sentinells near each other.
must never slight the danger, but must alwayes
pect and fear surprises and treasons, being vi-
nt and active: often visiting his guards, and
ming upon them at unawares: that so they
y fear asmuch to be surprised by the Gover-
ur as by the enemie; which course will hold
m to their duties.

Of the taking of fortresses by petard or other surprise, or by treacherie.

Chap. VI.

THey which have an enterprise upon any p will surprise it either by petard, or by sca or by some other defect which is in the gat Walls, or else by intelligence and treacherie.

If you would surprise it by petard, you first well know the gates, rails, barres, pallisa draw-bridges, bridges, pitfalls, portcullices grates: and the places of the flanks, whether be on the sides, above, or before; whethe ditch be drie or filled with water; whether broad or deep; whether there be loop holes the gate, corps-du-guards, and in what place; w ther the entrance into the gate be right on or w ing; and in all these things you must observe h many paces there may be of length, brea height, and distance between piece and piece near as may be.

The place being discovered, you must m use of stratagems to cloak your intentions, an divert your enemy to some other place.

When there be any suburbs, decayed houses any woods near the place which you intend surprise, you may make use of them to facili your approaches, and to lay your ambushes, the easier to discover what is done about the g of the town, so to lay hold on the occasion at instant when you see it fair for you; and to ceive advertisements by those persons which shall have sent to discover the place.

Be

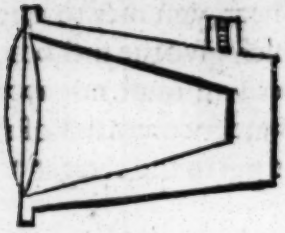
eing thus near, you may to good purpoſe re-
e thoſe which give the firſt onſet, and diſpatch
eadier; yet you muſt not approach ſo near,
at you be under command of their canon, for
(if you be put to the retreat) you be had by
breech.

he time well taken doth much facilitate en-
iſes, which is uſually a little before day, by
n that the ſentinels (being weatie and faint)
eep, and darkneſſe favoureth the approaches,
ſerves for cover of thoſe which put the plot
actice, prepare the engines, and plant the pe-
, and thence gives terrour to the aſſailed.

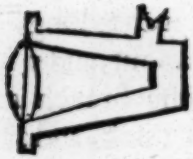
he petards muſt be made of fine or red cop-
with a tenth part of braſſe. That for the
e muſt be 11 inches long, and at the breech
hes and a half about, and 5 inches wide with-
he metall at the breech muſt be one inch
ne fourth part thick, and a half inch thick at
eck, without reckoning the muzzel ring. The
th muſt be 10 inches wide, and it muſt have
handles, and a pipe over the touchhole
ing to the breech. It muſt weigh from 60 to
ound of metall.

hat for gates with overthwart barres, muſt
inches long, five twelve parts of an
thick at the neck, and one inch at the
ch. The mouth 7 inches wide, 6 on the out-
of the breech, and 4 within. It muſt weigh
upon 40 pound.

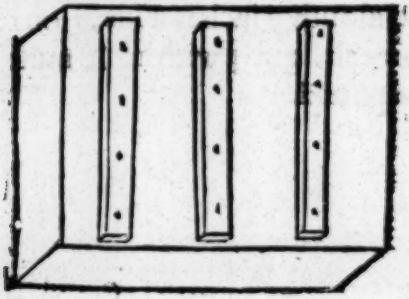
That



That for gates with plain bolts, or for p
does, muſt be 7 inches long, one third part
inch thick at the neck, and three fourth parts
inch at the breech, the mouth 4 inches wi
inches and a half at the outſide of the breech
2 within. It muſt weigh near upon 15 pou



Between the petard and the bridge, there
be a madrier or wooden planchier placed, 1
and a half broad, 2 foot long, and 3 inches t
If the wood be not very ſtrong, it muſt
ſtrengthened with plates of iron, being ſe
athwart on the outſide of the planchier,
lengthwiſe on the other ſide.



The charge of the petard for the bridge is
n 5 to 6 pound of powder; of thoſe for
ng gates from 3 to 4 pound. And for palli-
es from one pound and a half to two pound.
y muſt be charged with the fineſt powder
can be had, beating it hard into the petard
t not ſo that you bruiſe the grain) which muſt
ſtopped with a wooden trencher or plug
n inch thick, very juſtly fitted, and ſome mol-
wax to be powred on it to cloſe the rifts, and
eep the water from getting in, if perchance
ould fall into the water. The petard muſt
be charged up to the mouth, but there muſt
fingers breadth left, which room muſt be
d up with towe or ſuch like, which muſt be
ed down very hard, and then there muſt be a
en cloth to cover the mouth of the petard,
bound with a cord about the neck, to keep
. Over the touchhole there muſt be applied
pple of cork, and over it a plaiſter of wax or
n, for fear of water.
efore the petard be hung on, you muſt have a
ning iron to ſtirre the priming powder, which
be of a ſlow mixture (that ſo the petardier
have leiſure to retire, before the reverſe of
petard ſurpriſe him) and it muſt be fit to re-
water. It is compounded thus; take 3 parts
ne powder, 6 of ſulphur, and 9 of ſaltpeter,
nd each of them apart very ſmall, then mix
n together in a diſh with a ſtick; then poure
of peter into it by little and little (that ſo it
not become as a paſte) and let it drie through-
the ſhadow, then lade your pipe with it.
The eaſieſt way to hang the petard at the barres
ates is by a fork, as this figure ſheweth.

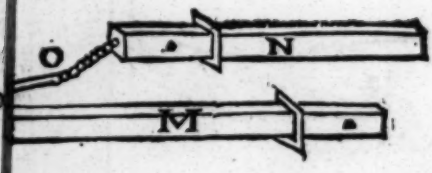
But



But the petard for the bridge muſt be ap
by a carriage, made as followeth.

It muſt have a counterpoiſe at the taile m
ted on 2 wheels of three foot and a half high
two inches and a half thick, mounted on a ſ
iron axletree, one inch and a half thick. The
of the carriage A. B. *muſt be broad enough t*
tain the petard, namely one foot; C. D. 3 *foot*
E. 20 *foot*, E. C. 6 *foot. The carriage is co*
ſed of 3 *long planks* C. A. G. H. D. B. *ea*
which are made of 4 *pieces, bound about with*
of iron, as is ſhewed in H. I. K. L. *and are*
taken aſunder, to make them portable, as is ſe
M. N. *And are then faſtned together with*
pin O *as is ſhewed by* ϑ. *Theſe* 3 *planks are*
ned together by barres 2 *inches broad, and 1*
thick, one foot diſtant from each other, as in F.
breadth of the planks is P. Q. 5 *inches*. Q.
inches, T. V. 8 *inches*, T S. 3 *inches*. *Alon*
plank of the middle of the carriage G. H
muſt be a range made to lay a train to give fi
the petard.





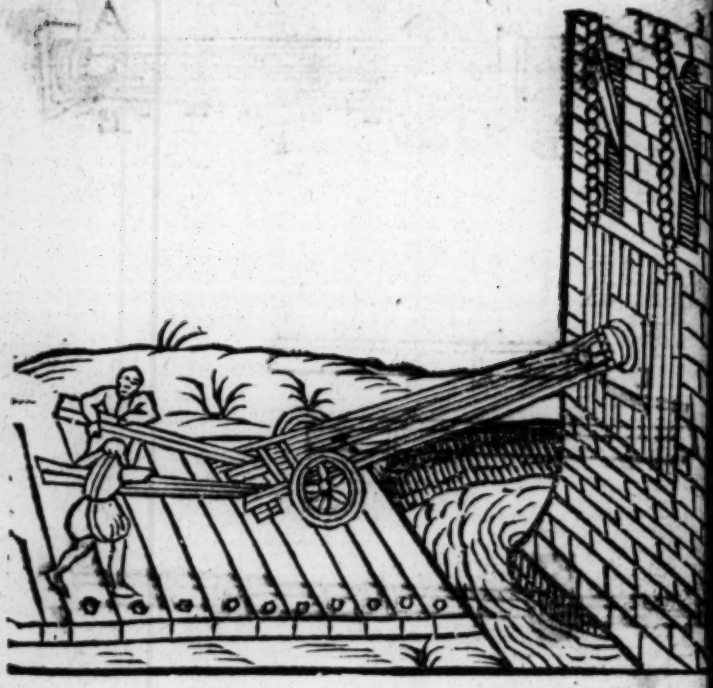


The rowling briage muſt be made even as the briage, ſaving that it is as broad at the end X *as the other* Y. *and is covered with planks, as is ed in* Z.



Two

Two men may easily thrust forward the c
riage, and apply the petard to the bridge.



When there is a gate between the bridge a
the draw bridge, the petard must be hung just
the middle of the bridge; but when there is
gate, the petard must be placed just against t
drawbridge, that so meeting with the violen
thereof, it may raise it on high, and by that me
bear down the drawbridge.

If the bridge joyn not close aloft (as often
hapneth) the petard must be placed as high
may be; for the violence of the blow which
will give against the stone-work of the gate, w
fell it down.

To fell down a drawbridge which joyneth n
well to the wall, it may be done without petar

a tortois of braſſe placed between the wall and
e bridge, which will fell it down with the crack
it.

This tortois is made thus; Take 2 diſhes of
aſſe which are made hollow 5 inches, 1 foot
oad, and 2 inches thick; joyn them one againſt
e other, and fill them with powder.

Ordinarily the good order, and good proviſion
all things neceſſarie, cauſeth the execution to
cceed well: ſo the leaſt diſorder hindreth it.
herefore every thing muſt be commodiouſly
dered, diſtributing to ſeverall commanders the
verſitie of things which muſt be executed; as
arrive at the place 2 houres before day, to ſend
t to diſcover, to know whether the enemie be
t advertiſed, and whether he keeps himſelf on
s guards (which would give you cauſe of chan-
ng your purpoſe) to cauſe your carriages and
wling bridges to be joyned together farre
ough from the gate, that ſo they of the town
ay not hear the mule go which carrieth them,
d the noiſe of them which are to unloade them:
cauſe the petardiers to advance, each of them
rrying his fork and planchier, and on his ſide a
an carrying his petard, which ſhall make over-
re of the barres, palliſadoes, and gates, ſo that
e carriage of the petard for the bridge may
aſſe, that ſo they may fell down the bridge. If
e bridge be in ſeverall pieces, they muſt be
awn together with hooks. If one ſhaft keep up
oft, a petard muſt be applied to it. If the bridge
ll into the moat, you muſt make uſe of a rowl-
g-bridge. After that, there muſt be 2 crutches,
oars, or treſſels ſet under the portcullice to hin-
r it from being let down: but if it be let down

before,

down before, it must be overthrown by the
lence of petards with great planchiers (if
of wood) but if it be of iron, you must h
petard with strong handles, to fasten one or
bowrs of iron chains about them, having hoo
each end to grasp good store of barres.

The gate being opened, you must readily
cour the first which seized on it, charging fur
ly upon those which shall oppose and make
against you, casting granadoes and fire-
amongst them to disorder them, attempting
gain their barricadoes by musketiers and pi
making all possible speed (for in this busi
diligence doeth all) hindring the assailed
gaining time to joyn or rally themselves t
ther, and to form a body to drive you out.
must place sure guards at the gate, and seize
the corps-du-guard (which is upon the
and ramparts) also on the market-place,
churches, the town-house, and all places wh
the inhabitants might assemble, fortifie, and re
combat. You must also succour those of
men which shall meet with resistance, kee
them from pillaging, commanding every ma
stand firm in his appointed place; untill the gu
be placed, all the streets and parts of the tow
secured, and the quarters and lodgings for e
one be laid out. But if you would surprise a g
of a town without petard, you must by discov
or intelligence know whether it be ill guard
whether there be few souldiers, whether t
wander farre from their armes, whether the co
du-guard be placed in a fit place to be surpri
whether the souldiers keep within it or about
whether they leave the gate at any certain hou

s for their meals, their devotions, their ſports, or thering of corn or grapes.) To know whether eir commanders know their ſeverall charges, whether they be negligent or ill obeyed, and at therefore the guards be diſordered, whether ere be any place near, fit to favour your em-ſcadoes (as ditches, garden walls, hemp, corn, llow wayes) to give on upon the gate at the ening of it, amongſt the throng of thoſe that ue out, or a little after; for the guards (having itted their armes, and put out their matches) y be ſurpriſed, before they can have means to over themſelves.

You may cauſe the gates to be ſurpriſed by ldiers diſguiſed, in the habit of countrey fel-ws, women, or merchants, bringing or conduct-of wares, wood, or hay, on their backs, by t, waggon, or boat, (if there be a river, lake, or) which may ſeize upon the gate, and hold it long till they which are in ambuſh come to re-ve them.

If you would ſurpriſe a place by ſcalado, you ſt firſt (by diſcoverie) know the advenues, counterſcarp, and the moat; to know whe-r you may come at it undiſcovered, go in and without difficultie, and that over againſt the ce where you mean to give the ſcalado, with-t being compelled to take any great compaſſe out the ſame, otherwiſe you are in danger to knockt, and taken in a trap. You muſt know ether the moat be drie or frozen, or the water llow, without mud, and eaſie to wade through; ether the wall be low, ſo that it may be ſcaled, nether the place (where you mean to give on) farre off from the corps-du-guard or ſentinell,

that you may not be discovered, whether the place be large enough to raise good store of ladders, and consequently for many men to enter at once; or strait, where you must enter one by one; and to see, whether (after some of the first be entred) you could make a greater overture on the place, or at least to have time to be all entred before day, or being discovered, to discover the place of the corps-du-guards, the neare place to be ranged in battalia, the market-place and churches, and to cause them to be seized upon by bataillons, sending them at one and the same time towards the right and left hand, and right forward, the grosse remaining firm in battalia to send succours where need shall require, keeping neare some gate to gaine and open it, to let in the Cavallrie.

A place may be surprised (at the wall) without scalado, by some defect in them; as when they are old, decayed, weak, of little thicknesse, of brick, stone, and clay, and without ramart, for they may easily be pierced by some engine or instrument: or if there be any lowe windows along the curtain, or any sallie-ports, or sink-holes or drains for filth, or places for water to passe in and out, being ill guarded and weak.

Intelligences and treacheries may take effect when some occasion shall give you means to corrupt the fidelitie of those of the place, who are able to give you entrance and deliver you the same. These occasions will be when you shall discover a possibilitie to convey some desire of change into their mindes, which often happeneth amongst high-minded souldiers who

ſire to make a fortune; or amongſt thoſe hich are revengefull, when they be diſcon-nted at the Governour or ſome other of-er. Beſides, moſt of them think themſelves dealt with, when they be not advanced to of-es, having a higher eſtimation of themſelves en they deſerve; and others be ſo cove-us, as there is nothing which they will not dertake for money. Theſe and the like things ay accompanie intelligences and treache-s.

How to beſiege and expugne cities.

Chap. VII.

A Citie is ſaid to be taken by force, when it is carried with an Armie by batterie; where-to there belong three conſiderations: The t before the enterpriſe; The ſecond, during the e of the ſiege; and the third, after the taking the citie.

Before the enterpriſe, you muſt conſider, whe-r you ought and whether you be able to it.

You ought, when by this means you recover ur own, weaken your enemie, you ſecure and tifie your ſelf on that part, you encreaſe your venue, and you get good ſtore of bootie. But u ought not to do it, if the charges of the ge will ſurmount your profit, or that will be difficult to hold the place after u have gained it, or when it is ſo ong, ſo well provided of all neceſſaries,

or ſo near to places of releef, that there is gre
likelihood of dammage, then hope of good
ceſſe.

You are able, when you have all manner
proviſion neceſſarie for the enterpriſe, and tha
ſufficient meaſure. The moſt neceſſarie things
money, ſouldiers, artillerie, munitions for
armes, as powder, bullets, morters, granad
muskets, pikes, &c. And for the inſtruments
ſhovels, pickaxes, hand-barrows, wheel-barro
ſacks, baskets, &c. And for wood to make p
forms for the artillerie, gabions, ſauceid
blindes, boats, &c. And victuall in abunda
The quantitie of all theſe muſt be meaſured
that which ſhall be requiſite for the ſouldiers,
canon, and the time that the ſiege may be lik
continue, which may be computed by the p
portion of your forces compared to thoſe
your enemie; by the qualities of the work
the place, with the number of your munitions
artillerie; by the garriſon, with your numbe
ſouldiers; by the ſituation of the place, and
releef which might be brought to it, with
means which you ſhall have to ſtop and hin
it, and to facilitate the bringing of victuall
your camp; by the diſtance, with the meane
lead your armie thither; by the qualitie of
ground, with the conveniences which you h
to make your approaches.

And becauſe that oftentimes accidents do
fall which were not foreſeen, as by unexpe
releef, an inundation or overflowing of wate
change of weather, a mutinie amongſt your
men, or a contagion.

There muſt be a provident care taken for a
tr

at, ſo as (being conſtrained to it) it may be
de commodiouſly and eaſily without diſorder,
t may be: for thereon dependeth the honour
diſhonour, the profit or dammage of the aſ-
ant.

During the ſiege, you muſt obſerve many
ngs with good order, and principally theſe;
ſt, you muſt environ and ſhut up the place, en-
nching your ſelf round about, fortifying your
as well againſt thoſe which might come to re-
ve them, as againſt the ſallies of the town, in
h ſort as not any perſon may be able to go in
out; chooſing a fit place for the Armie to ſet
wn, to make the field of battaile, to make your
arters and their alarm-places. Taking care that
quarters be ſecured by good retrenchments
forts, well flanked and guarded, within againſt
ſallies, and without againſt ſuch as might
me to releeve the place, or diſturb your Armie:
t they be commodious to receive and conſerve
munitions for actions and executions. You
ſt diſpoſe the approaches, run your trenches,
ke your way to arrive in ſafetie to the place
ere you intend to raiſe your batterie, obſer-
g that it be as ſhort as may be, ſheltered and
thfully guarded by a good number of men,
ving room enough between piece and piece,
for their reverſe, and that they command the
ce which you intend to batter; that the
nches be ample, large, deep, not ſtraitned,
ll flanked and defended by forts more or
ver, according to the ſtrength of the garriſon
ich is within the place, and to the time in
ich the releef might arrive.

During the time whileſt you are making the

trenches of approach, you must take a
all the high flanks with the canon, then
ving run your trenches to the counterscarp,
must raise platforms with beds for the
tillerie, near the points of the counterca
to take away all the low flanks, by this me
to render the passage of the moat secure.
whilest this batterie is a making, you m
pierce the counterscarp, and advance y
galleries, untill you joyn them to the B
work; at the same time beginning the
and the mine. But if you be put to fo
it by Artillerie, dispose your batterie so
it may commodiously discover the place wh
you intend to batter; that there be ro
and libertie for the pieces, loop-holes,
nitions, guards and officers; that it be
exposed to the Artillerie of the enemie, or
ing so, that it be sheltered by traverses
gabions, making it hollow underneath if
fear mines, and retrenching it round ab
to meet with the sallies of those of the tow
furnishing it with planks and pent-houses aga
their granadoes and stone-pieces; also
approaching too near, to prevent their f
works and granadoes. Make your batterie
riously and in good order, battering wit
a fathome of the foundation of the w
piercing it in divers places; then batte
acrosse to make the wall to totter.
breach being made, you must cause it to
viewed by men chosen to that purpose, each
ving a head-piece on his head musket pro
and a target with a long rift, and another
acrosse that. The breach must be acce

le and not too right on, capable of many ſſailants, having all the flanks broken both igh and low. The ſouldiers which are o give the aſſault muſt aſcend in good or- er; aſſail furiouſly, fight obſtinately, and ney muſt either be repulſed by thoſe of the arriſon, or remain maſters of the place. If ney be repulſed by the ſole valour of the ene- nie, in this caſe (without delay or ſuffering he enemie to gather breath) you muſt charge nem again with freſh men and in greater num- er, ſo often, untill you enter by force; for ghting onely againſt men, it were a ſhame that greater number of freſh men ſhould not force nem.

If ſome retrenchment and new fortification nade by the garriſon hath held the aſſailants om paſſing further; in this caſe, if that for- ification be weak, it muſt be forced by the ap and mine, ſcaling ladders, fireworks nd granadoes; but if it be ſtrong, you muſt odge upon the breach, and preſently again egin the ſap and mine and approach, and raw up ſome piece of ordinance on the reach.

Whileſt theſe things above ſaid be in the executing you muſt moleſt the beſieged by ll poſſible means you can, as by attemp- ing them by treacherie, making them con- ume their munitions in ſhort time and un- profitably, breaking the conveyances of heir waters, making feigned batteries, confounding their ſignalls by making the ike, ſtirring up cauſes of ſuſpicion amongſt hemſelves, often making falſe alarmes,

taking heed that you be not affronted by ſpi
cauſing it to be made known that you want
thing to bring the ſiege to an end, galling th
with fireworks, granadoes, and artillerie, in th
magazines, corps-du-guards, and alarm-plac
finally giving no reſt to the aſſailed untill you ha
either forced them, or be conſtrained to retreat.

If you carrie the town by force, and rem
maſter of the place, the bootie is to be given
the ſouldiers (principally to thoſe which ma
the aſſault) which are the priſoners and ſpoils
the enemie, alwayes having regard to the wom
and children to deal fairly with them.

If it be commodious and advantageous to t
vanquiſher to preſerve the fortreſſe, he muſt
pair it preſently, emptying the moat where it w
filled up, laying plain the trenches, throwi
down the cavalleroes and batteries without,
pairing and making up the breaches, returning t
waters into their naturall courſe if they we
turned out, fortifying the place better then fo
merly it was, if it may be, providing it of a ſuff
cient garriſon, of good, valiant, and prudent Go
vernours and Captains, of victuall, armes, manu
factures, mechanicall inſtruments, and Apothec
ries drugs.

If it be not advantageous to maintain the for
treſſe, he muſt cauſe it to be demantled, and all th
fortification of it to be raſed; leaving the houſe
entire, provided that afterward they may no
again fortifie there, nor endammage him.

The uſuall practices to aſſail fortreſſes.

Firſt you muſt labour to get a map or plat o
the fortreſſe, and of the champain round abou
it,

and to be informed of their munitions; to
ow the bigneſſe and capacitie of the fortreſſe,
e amplitude and commoditie of the market-
aces and ſtreets, the ſituations of the magazines,
wn-houſe, Governours lodging, the rampart
d walls, their height, thickneſſe, matter, and
m, the capacitie, height and ſituation of their
valleroes. What Bullworks there be, and whe-
er they be great or ſmall, ſunk into the moat,
very high mounted, commanded or command-
g, blunt or ſharp, having eares (or orillons) and
emats, or not; full or emptie, of a large gorge,
ſtrait; made of earth, or lined with ſtone or
ick; mineable or not.

Whether the caſemats be ſeen from the cham-
in, whether they be high or low, ſingle or dou-
e one upon the other, whether you can batter
em in a ſtraight line, or glancing, and whether
y have ditches before them to receive the
nes of the batterie or not.

The breadth and depth of the moat, whether
e bottom be of ſtone or earth; whether it be
e or with water in it, either all or in part; whe-
er there be ſallie-ports, whereabout they be, and
om whence they can be diſcovered.

Whether the counterſcarp be of meer earth, or
th a wall of drie ſtone, or with lime and ſand.

Whether the covert way of the counterſcarp be
oad or narrow, well or ill ſheltred and flanked;
ether the parapet be raiſed above the plain, or
k low; whether it be of tranſported earth,
d mingled with old ruines, or meer earth, and
hether it be eaſie or hard to be cut, ſapped, or
erced.

If there be ſuburbs belonging to the place,
whether

whether you can become maſter of them at
onſet, or whether you muſt be put to batter th
with Artillerie.

Whether there be other works on the outſ
of the counterſcarp, what they be, and how t
be made.

Whether the ground round about the town
command it, or whether it be levell champai
or if it be commanded, whether it be mooriſh
drie, whether it be rockie or ſandie, and whet
you muſt approach it by traverſes or trench
and whether they be eaſie or hard to mak
whether thereabout be wood to ſerve you
the making of gabions, ſauceidges, and ot
things: whether there be convenient place to
camp the Armie ſafe from the Artillerie of
town, or whether you may encamp near the to
by reaſon of ſome advantage, or by ſheltring y
ſelf with traverſes, or whether you ſhall be c
ſtrained to keep aloof off: Whether there
a river, and what manner of one; whether y
can divert it from them or not; whether you m
make benefit of it, or are to fear an inundation
it; whether it be wadeable or navigable, at ſom
times, or at all times.

Whether the ſituation of the place be near
farre off from other places on that ſide, wheth
it be able to get ſuccours or munitions, wheth
quickly or late, and whether you can hinder it
not, and how. Knowing all theſe things, y
muſt be informed of the munitions of the tow
the number of the garriſon, how many horſe, wh
commanders, what ſouldiers, what number of A
tillerie, as well great as ſmall; what powder, a
how much, what Enginiers, what makers of fir
work

orks, and what Canoniers; whether they be unitie within the town, or whether there be diſions.

The Generall being well informed of all theſe ings, being reſolved to force the place, becauſe e ſhall judge it faiſeable, he muſt ſend his oops of light horſemen to overrun and waſt the ountrey round about, and to take priſoners, thereby to be informed more certainly of the eſtate of he place.

He muſt lead his Armie near to the town, that ey may ſee it in battalia, cauſing thoſe to be fuouſly charged which ſhall ſallie out of the town o skirmiſh, and by this means he ſhall diſcover he place, the Bullworks, the moat, the counterarp, and the other works.

He muſt make his quarters in ſuch place as moſt ſecured from the canon ſhot of the town, the beſt aire, where he may beſt have the ommoditie of water (and wood if it may be) nd the faireſt ſituation to make the alarmlace.

He is to ordain the quarters of his Armie, and hall cauſe the line of circumvallation to be well etrenched and guarded, both againſt releefs, and gainſt thoſe of the town.

He ought not to have ſo much regard of aſſaulting the town in that part where it is weakeſt, s of the commoditie and ſecuritie of his camp nd his quarters: and commonly the approaches re made from thoſe places.

The trenches muſt not begin nearer to he place then harquebus a crock ſhot, or t leaſt musket ſhot, running them ſo hat they be not ſeen ſtraight along by

thoſe

thoſe of the town ; that they be broad and de
well flanked and furniſhed with forts, cover
thoſe approaches with hurdles, which are ſubj
to granadoes and ſtone-pieces.

The place of the Artillerie intended to bat
the high flanks and parapets, muſt be raiſed
high, that it may command them ; but that whi
ſhould make the breach and beat down the wal
muſt be ſunk into the counterſcarp, battering t
wall between winde and water (if there be an
or at a fathom height above the ſuperficies of t
ditch, if it be drie. The firſt is placed when y
begin your trenches of approach, to favour the
the other, when you lay your gallerie to pierce t
counterſcarp, this batterie makes the breac
and beats down the low flanks. Whileſt this b
terie is a making, you are to pierce the counte
ſcarp, and to have the boats or the wood for t
galleries in readineſſe, to bring them to the fa
of the Bullwork, and to go to the aſſault ſo ſoo
as you have ſhot a breach, or to ſap and mine th
face of the Bullwork, and there to lodge in ca
you cannot advance further, and to carrie it b
force.

You muſt lodge your musketiers within th
trenches, and eſpecially in thoſe which run alon
by the counterſcarp, that ſo they may beat awa
all thoſe of the town that might appear, as well o
the curtains as caſemats.

You muſt alwayes make the breach on th
faces of the Bullworks near their points, unleſſ
ſome advantage do incite you to do otherwiſe.

The entrances to the galleries on the mo
muſt be as farre diſtant from the flanks as may be
but in ſuch ſort as they be not ſeen but of on
flank

nk. The more galleries there be, the better.
uſe your granadoes to play into the middle of
e Bullworks ſo continually, that you may hinder
e enemie from working there, or there placing
eir guard.

If the moat be full of water, you muſt emptie
or paſſe over it by floating bridges (which is
ngerous) or by galleries, which is not ſo ha-
rdable.

You may emptie it, when there is near hand
me place lower then the ditch, by piercing the
unterſcarp, and giving the water a courſe to-
ards the place; or elſe you may make a ditch,
d pierce the counterſcarp to cauſe the water to
n into it, which is drawn out by pumps. Or
ſe you are to make floating bridges of barrels or
ndles of cork. But if the moat be ſhallow, you
ay make galleries with ſauceidges. Theſe ſau-
idges are made of faggots of bruſh wood, from
5 to 20 foot long, and one foot thick in dia-
eter (all ſtuffed with rubbiſh to keep them from
ating on the water) then upon theſe ſauceidges
u are to lay hurdles or planks.

If the moat be drie and of earth, you muſt make
enches: uſually to that which is drie (if a breach
e made) you make neither trench nor gallerie,
ut you take away all the flanks to paſſe it ſecure-
, and you ſhelter your ſelf on the ſides by
urdles, bruſh wood, or gabions.

If you force the place by little and little, and
at the ditch be of a rock, you muſt make a tra-
erſe within the ditch with ſauceidges, or with
abions, or with linnen ſacks full of earth.

Having paſſed the moat, you are to give the
aſſault (if the breach be ſufficient or ill retrench-
ed)

ed) or elſe you are to lodge at the foot of
Bullwork, and to go to the ſap and mine ; and
cording to their effect you muſt give the aſſa
advance, or lodge.

If the retrenchment of the aſſailed be gre
firm, and ſtrong, having gained the Bullwork,
muſt there draw up and plant your ordnance,
make your batterie the moſt ſpeedy and viol
that may be.

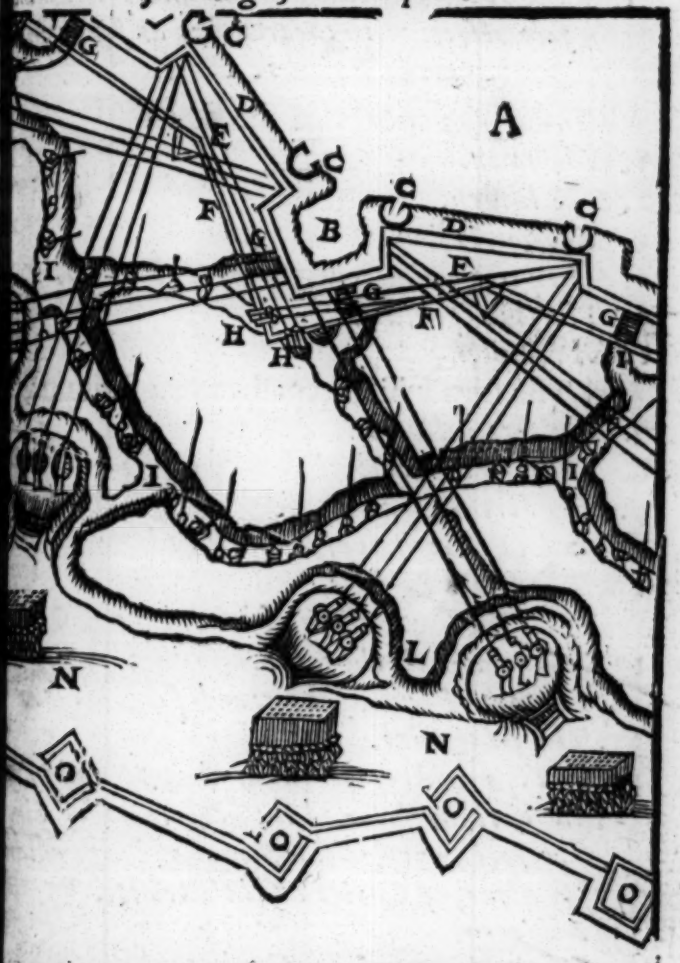
Nothing ſo much affrighteth the aſſailed
furious and expedited batterie, for he hath
leiſure to retrench himſelf, and knows not wh
to range himſelf to be under ſhelter.

That doth much wearie and moleſt the
ſieged, when they are aſſaulted at 3 or 4 ſeve
Bullworks, at 3 or 4 corners of the town ; t
are in continuall ſuſpicion, they have their for
diſunited, they cannot prevent falſe alarms, th
labours are very great, and their guards m
more toilſome and inſupportable. Beſides th
every man is diffident of the other guar
breaches, retrenchments, and of their endeavo
to make good defence.

It alſo much diſcommodateth the beſiegers,
their forces are diſunited, their quarters are fa
from each other, they are in danger to be hard p
to it by ſallies or by ſuccours, being ſo ſcattered.

T

The figures following will facilitate the understanding of this chapter.



A. *The town.*
B. *The Bullworks.*
C. *The cavalleroes.*
D. *The rampart.*
E. *The ditch.*
F. *The counterscarp.*
G. *The Galleries of the ditch.*
H. *The Artillerie sunk lowe to beat down the lowe flank.*
I. *The trenches.*
L. *The cavalleroes.*
N. *The alarm-place.*
O. *The trenches against succours.*

The

The description of the King of Spains Ar
encamped before Ostend, on the quarter of th
fort Albert, with the trenches as farre
as the Downes. 1601.

The works of the town.

1. *The town.*
2. *The haven.*
3. *The kowes fort.*
4. *The great poulder, guarded by the English.*
5. *The small poulders.*
6. *A redout.*

The forts which kept the town shut up.

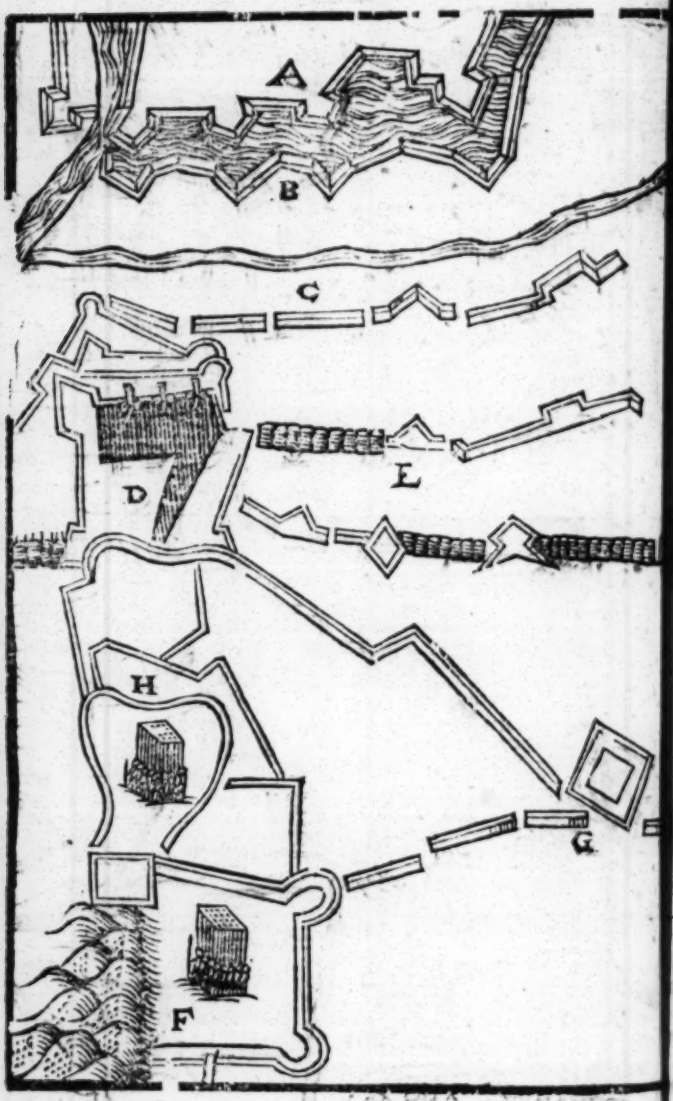
7. *The fort Albert.*
8. *The fort S. Elizabeth.*
9. *The fort S. Marie.*
10. and 11. *The forts of Count Frederick.*
12. *The fort of S. Anne.*

The quartering of the camp.

13. *The quarter of the court.*
14. *The port of brush faggots and sauceidges.*
15. *The Magazine.*
16. *The Spaniards come out of Guant, and in*
Rear of them followed the Regiments of Si
Antonio, Lowys de Vilar, Rivas, of Burgundi
of Wallons, of Catrice and la Borlotte.
17. *Irish men.*
18. *Spaniards come from Cambray.*
19. *Wallons of Count Fresin.*
20. *The Regiment of the Baron of Achicourt.*
21. *The Regiment of Don Alfonso d' Alvolas.*
22. *The Regiment of Count Trivulsio.*
23. *The guards of Cavallrie.*
24. *The batterie before the alarm-place.*
25. *The trenches of S Anne.*
26. *The forts of Catrice.*

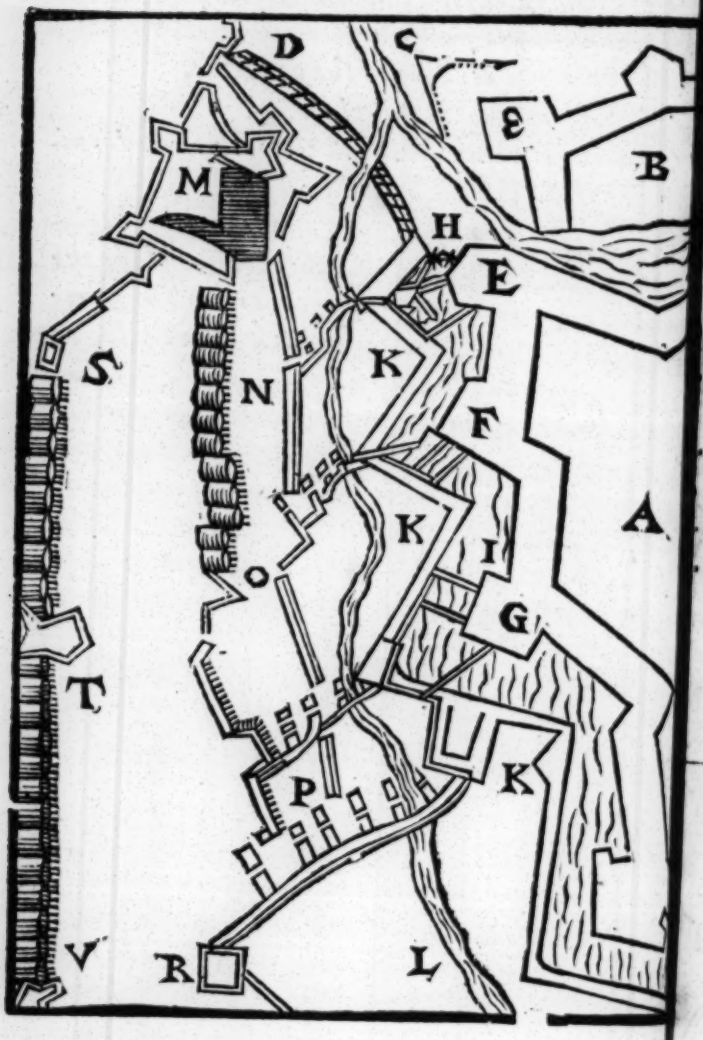

1
2
4
3
6
3
25
10
26
24
23
4
9
16
18
8
22
19 20 21
14
7
13

The trenches made before Ostend, from th
Downes on that side of the fort Albert,
to the platform.



. *The town.*
. *The counterſcarp.*
. *The channell before the counterſcarp.*
. *The platform.*
. *The trenches leading to the poulders.*
. *The fort of the alarm-place.*
. *The great trench which ſheltereth the alarm-place.*
. *The galleries which were made at the beginning of the ſiege with ſauceidges along the Downes, to ſeize upon them; which were to be put forward by little and little, as farre as the haven.*

The trenches made before Oſtend, from the platform to the town.

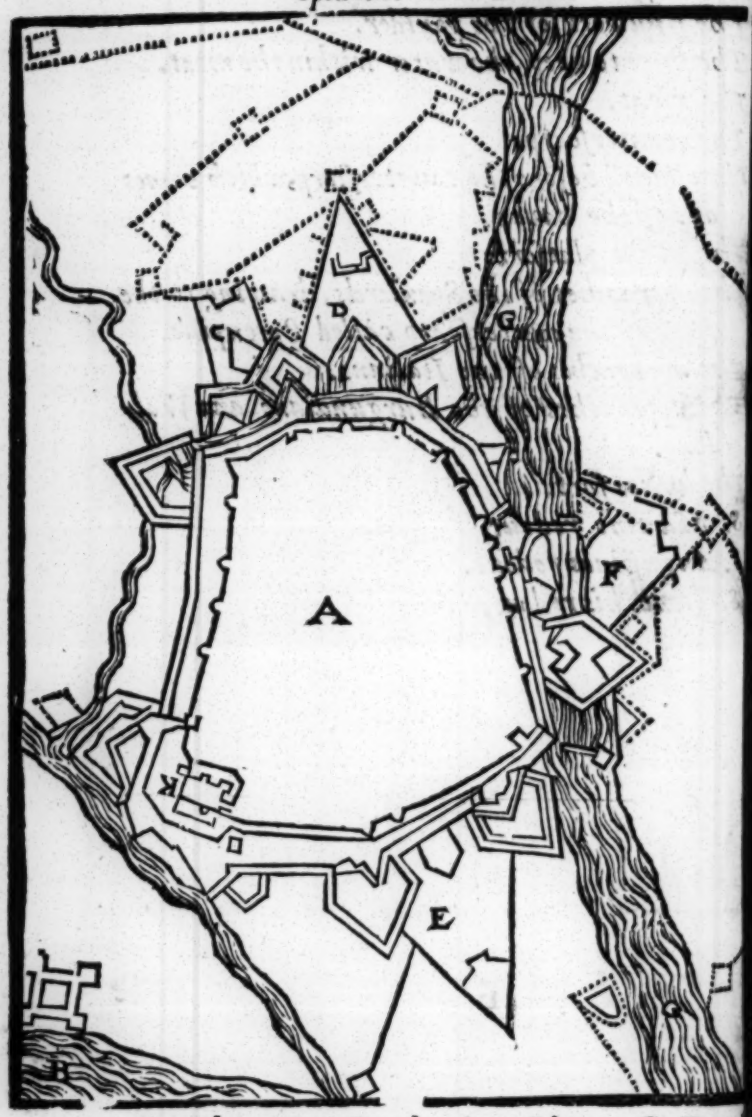


A. *The new town.*
B. *The old town.*
C. *The old haven.*
D. *The dam.*
E. *The Bullwork of Sandhill.*

E.T

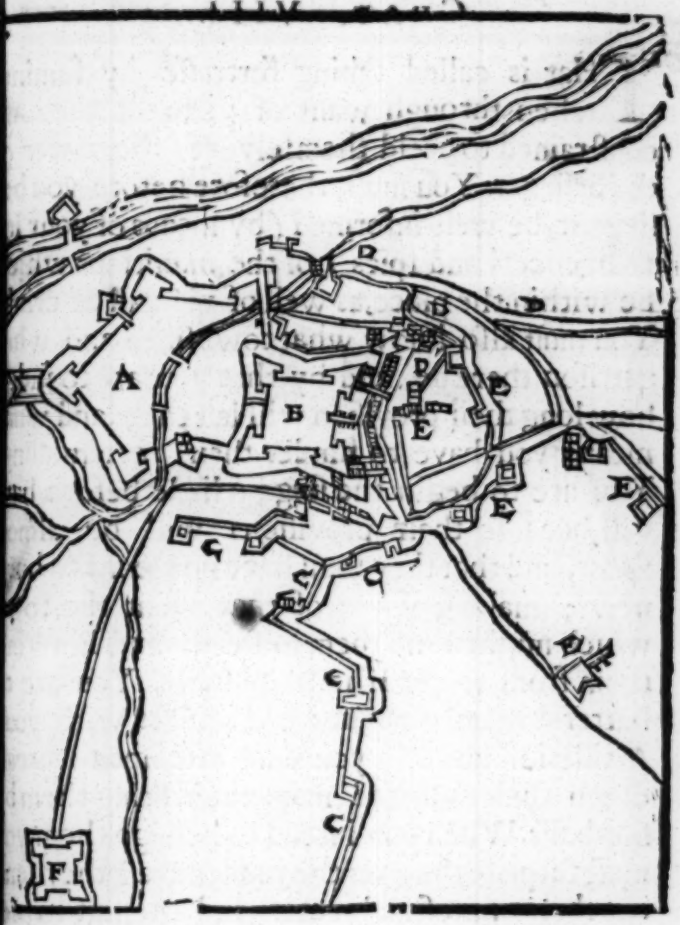
The Bullwork of Helmont.
The weſt Bullwork.
The Bullwork of the poulder.
The ſluce to keep the water within the moat.
The moat.
The counterſcarp.
The chanell before the counterſcarp, which comes out of the haven.
The great platform.
The approaches of the Spaniards, drawing to the point of the counterſcarp called Porcupine.
The approaches of the Italians.
The approaches of the Burgundians and Wallons.
The kowes fort.
S. Martin's redout.
S. Auguſtines redout.
S. James his redout.

The ſiege of Rhynberg, by Marquis Spinola. anno 1606.



A. *The town.* B. *The river Rhyne.* C. D. *The French quarter.* E. *The Engliſh quarter.* F. *The Friſons quarter.* G. *The quagmire.* K. *The caſtle of the town.*

¶ The lines ſhew the works of the town, and the pricks demonſtrate the approaches of the Spaniards.



A. *The town.*
B. *The Caſtle.*
C. *The trenches of the Prince of Anhalt.*
D. *The French trenches.*
E. *Prince Maurice his trenches.*

Of taking fortreſſes by famine.

Chap. VIII.

That is called taking fortreſſes by famin when through want of victuall, they a conſtrained to yeeld themſelves to the power the beſieger. You muſt therefore before you b ſiege it, be well informed (by means of your i telligencers and ſpies) of the munitions whi be within the place, as well of victuall as drin You muſt alſo know what townſmen and wh garriſon there be, and by that you are to jud how long their proviſion will laſt them, and wh means you have to hinder their revictuallin You are to begin the ſiege a little before ha veſt, becauſe their proviſions will be alm ſpent, and that they ſhall have no means to ha new; making waſte of that about the to which might ſtand them in ſtead, and hindri them from water if it be poſſible. You are batter down their gates and bridges with yo Artillerie, and alſo you muſt attempt to bre down their mills and magazines, firing them fire-balls. When you intend to beſiege them, y muſt ſurpriſe them on the ſudden, leaſt they ſe out their unprofitable eaters, and attempt to p vide themſelves. You muſt have good ſtore Cavallrie, to be maſter of the field, and alway to ſend out upon diſcoverie. The town muſt b ſhut up with trenches round about, fortifie with many good forts, that ſo you may hinde their revictualling, and withſtand the force of releef, if it be to be expected: as the Prince *Mau rice* did before Grave, *anno* 1602. and befor Sluce *anno* 1604.

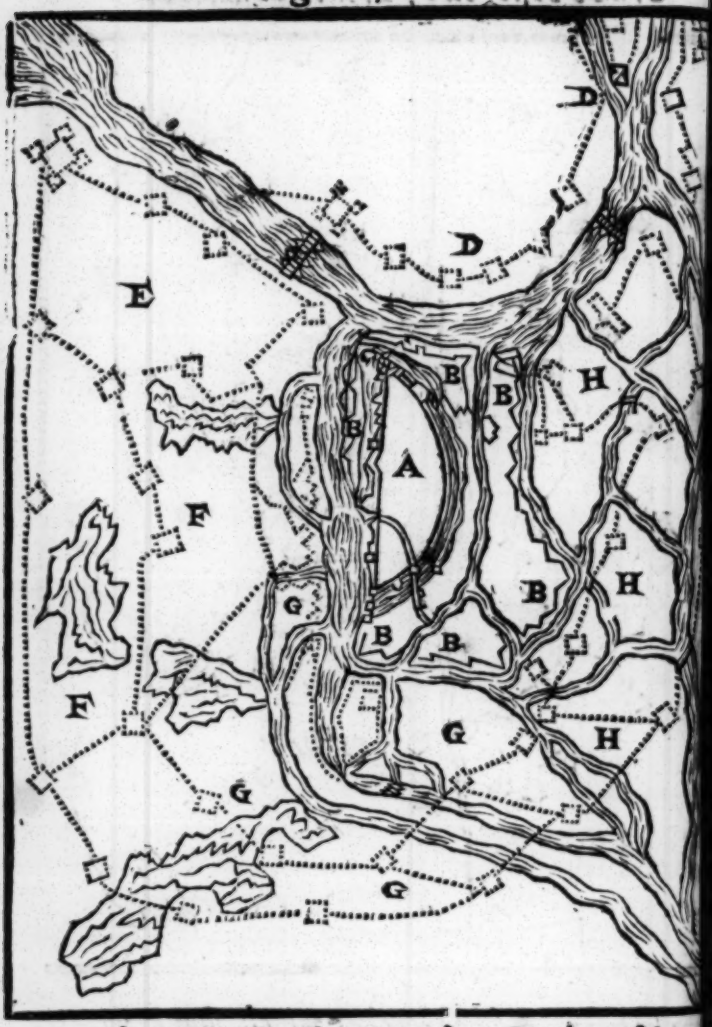
Grav

Grave beſieged by Prince Maurice.



A. *The town.* B. *The trenches which ſhut it up.*
C. *The trenches againſt releefs, with redouts round about.* G. *The trenches of approach.*
E. *Prince Maurice his quarter; and on the other-ſide of the river Count Erneſts quarter.*
D. *Count William his quarter.*
F. *Colonell Vere his quarter.*
H. *The trenches of the Spaniſh releevers.*

Sluce



A. *The town.* B. *The outworks.* C. *The caſtle.*
D. *The Iſle of Caſſant, with the trenches of th*
Hollanders, marked with pricks in all this figur
E. *Prince Maurice his quarter.*
F. *Count William his quarter.*
G. *Count Erneſt his quarter.*
H. *The quarters of Colonell Dort, and Colone*
van der Noot.

f the defence of fortreſſes againſt the petard, and other ſurpriſes and treacheries.

Chap. IX.

THey which would prevent being ſurpriſed
muſt have two conſiderations; the one con-
rning the attemptours, the other touching the
rtreſſe.

Concerning the attemptours, you muſt (if
ſſibly you can) have ſpies amongſt them; at
aſt you muſt keep ſentinels as farre diſtant from
e fortreſſe as may be, that ſo the Enemie arrive
t and be on your jack at unawares and with-
t being diſcovered.

Touching the fortreſſe, you muſt not unfurniſh
to ſupply other places, ſo as that which re-
aineth be not ſufficient to keep and ſerve it.
ou muſt appoint the place of rendez-vous for
e ſouldiers and citizens in fitting parts of the
wn, and that they ſtirre not from their ſeve-
ll places without command from the Gover-
our, or Sergeant Major, whatſoever pretence
e enemie may make to charge the town in di-
ers parts.

The lodgings of the Governour or Sergeant
ajor ſhould be about the middle of the town,
ear ſome ſpacious place, which muſt be the
larm-place of the town.

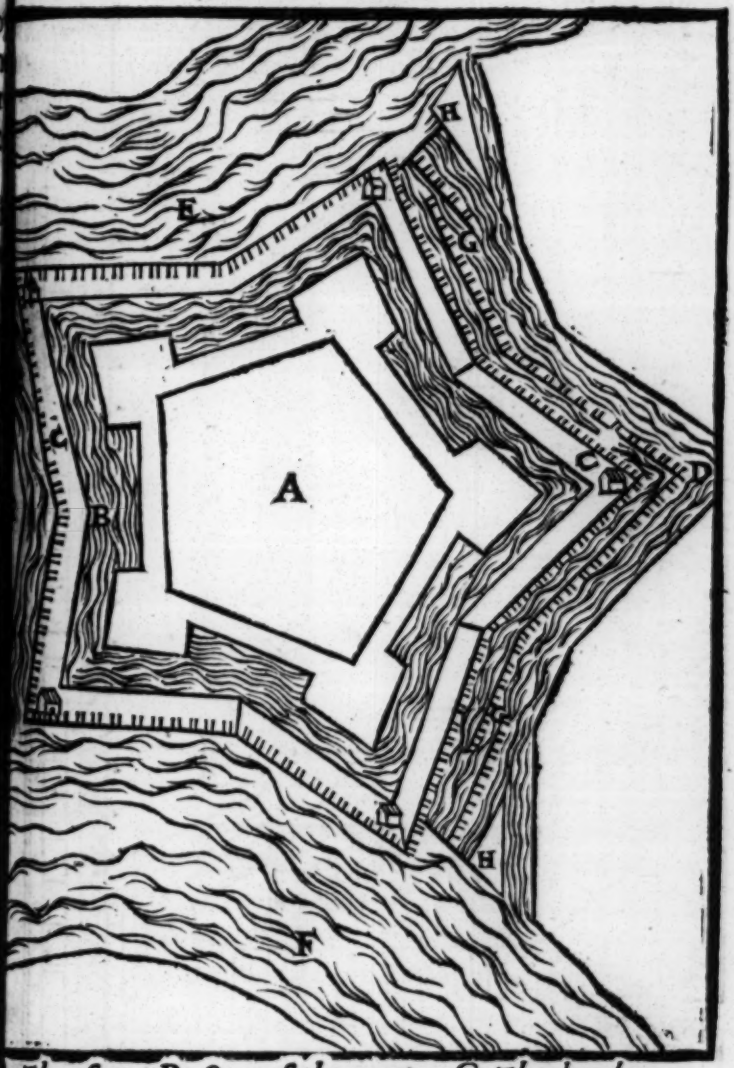
There muſt be iron chains at the corners of
e croſſe ſtreets which are before the gates of
e town: and you muſt batter down the fronts
f the houſes which are juſt over againſt the
ates, with canon ſhot: and place one corps-
u-guard in the alarm-place, another about the
middle

middle of the moat before the bridge, in th
manner of a dovehouſe, into which the entranc
is by a little draw-bridge; another on every gat
of the town, into which none may enter but b
a moving plank; and others round about th
walls, near enough each to other: and theſe fu
niſhed with ſouldiers more or leſſe, according t
the capacitie of the place, and the danger.

The corps-du-guard of the alarm-place ha
the charge to make the rounds, counter-round
and grand-round, and to place the ſentinel
which muſt be at ſo near a diſtance, as they m
heare and underſtand each others ſpeech, a
ſpecially at the corners and the chanell holes,
drains of water.

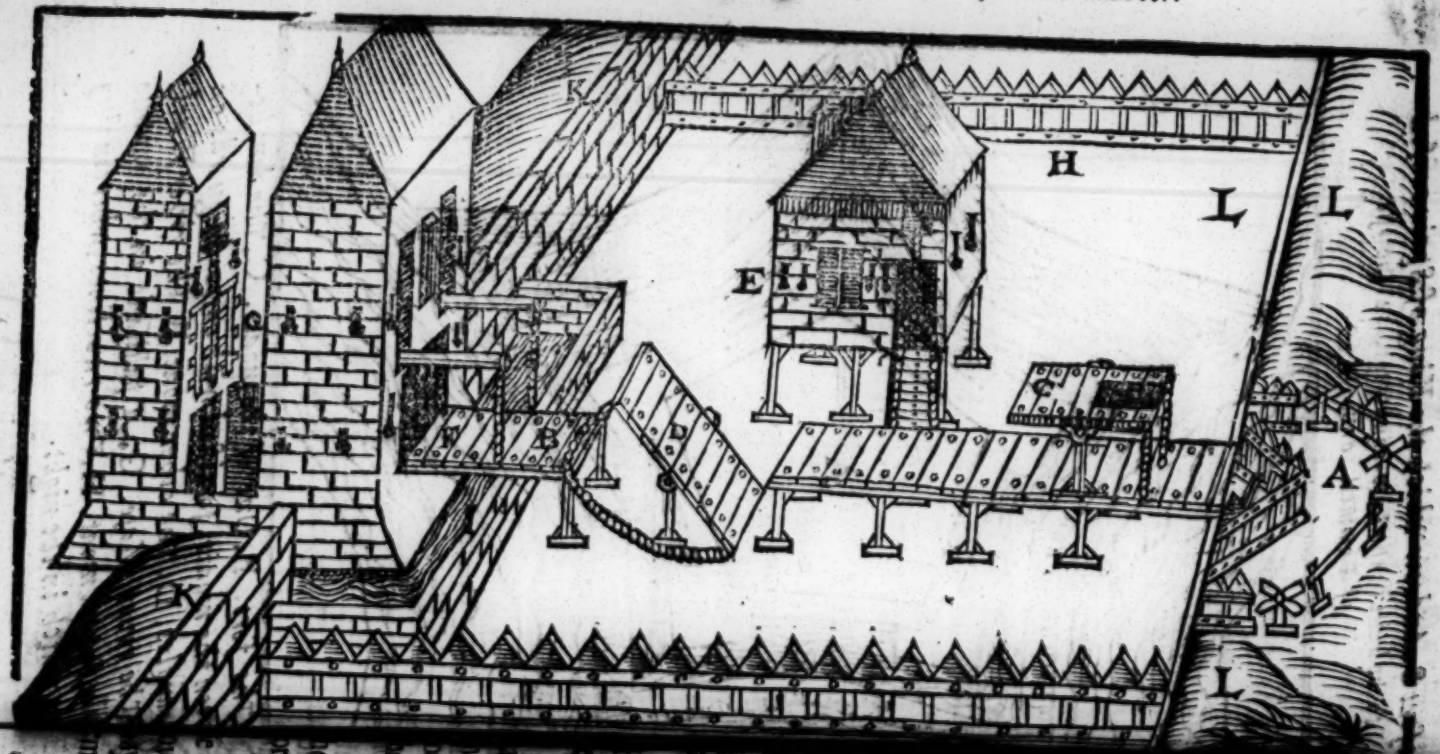
You muſt place ſentinell-perdues without th
town, which is the charge of the corps-du-gua
which is without before the bridge. If the
be a dam of earth between two moats rou
about the town, there muſt be guards placed
the night, for that is a moſt ſecure remedy agai
ſurpriſes. This dam of earth may be apprehen
ed by the figure following:

he fort S. Andrew which the King of Spain caused to be built in the Low-countreys, in the Isle of Bommell. anno 1599.



. The fort. B. One of the moats. C. The dam between the moats, fortified with corps-du-guards on he angles. D. The other moat. E. The river Wael. . The river Mase. G. A pallisado in the middle f the second moat. H. Two ravelines, wherein they ept watch in the night.

The building of the gates of ſtrong rampierd town, ſhould be after this manner.



88

A. *The palliſade and the barres.* B. *The bridge* ormant. C. *The trap-bridge.* D. *The turning-* idge. *It were better to place it within the two* ers G. *without any other ſtay or prop ſave onely* e tampin *within the wall.* E. *The corps-du-guard* ilt *within the moat.* F. *The draw-bridge.* G. *The* rtcullice. *If the moat be drie, you muſt there make* e *two palliſadoes* H. *and ſink the ſmall ditch* I. *ſo* w *as the water, or very near it.* K.L. *The breadth* the *moat.*

The gates and bridges muſt be flanked on both des, and on the upper part with loop-holes, hich muſt be large enough to caſt water out at m, alſo pieces of timber, ſtones, granadoes, to ench the fire of a petard, to beat it down, and kill the petardiers. But not ſo wide that ſur-ſes may be made by them, and there to give e ſcalado. Some place a portcullice there, hung a rope, which is very fit to beat down the pe-ards.

If you make half moons before the gates of e town, they will be the ſtronger, and the bet-ſheltred from the champain.

You muſt keep a light piece of Artillerie (but ving a great calibre) at the corps-du-guard of e gate, which muſt be charged with car-uches and rubbiſh or ſtones, to turn it towards e place where the enemie ſhall give on.

The moats muſt be deep, having a palliſado in e middle; ſuch as have water need not be full, t that facilitateth the boats for the ſurpriſe.

The curtains and faces of the Bullworks muſt e ſeen and diſcovered by the flanks of the wn, even by the low flanks, that ſo the canon y ruine all the ladders which might be at-mpted to be there raiſed.

The

The curtains muſt be high and out of dang
of ſcalado, if it may be.

The holes by which the water comes in,
drains of filth paſſe out, ought to be very ſtrai
built of lime and ſtone, oblique within the wa
bound with ſtrong grates of iron, having a corp
du-guard or a ſentinell on the wall juſt ov
againſt the ſaid grate.

To be well aſſured of the gates and walls, t
way is to appoint good guards, and thoſe di
gent, ſtrong, and well placed: thoſe on t
walls muſt be ſet preſently after the ſhutting
the gates before night; and they muſt not
diſmiſſed untill day, and untill the ſentinell
the ſteeple hath given the ſignall by the bell; a
that no man knoweth the place where he ſh
be placed untill the very inſtant that he entre
the guard.

You may prevent treacheries knowing t
cauſe; for either it proceedeth from the G
vernour who hath evill entreated, diſgraced,
offended the ſouldier in his reputation, perſon
means, and provoked him to an evill diſpoſitio
or it proceedeth from the ſouldier who is a
bitious of honour and degrees, or covetous
greater means; or elſe from the citizens wh
are tyranniſed over by the garriſon.

This matter is ſo tickliſh, that the very ſuſp
cion is puniſhable; but the better way is to di
ſemble it, and to cauſe the matter to be furth
attempted; mean time doubling your round
and making extraordinarie counter-rounds.

Of the defence of fortreſſes againſt ſieges.

Chap. X.

A Fortreſſe is ſaid to have reſiſted the enemies forces, when (having well defended it ſelf) it remaineth in its former libertie. To do this, you muſt draw into the fortreſſe whatſoever will be uſefull for you, and ruine all without which might endammage you; laying flat houſes, woods, barns, mills, hollow wayes, gardens, foumains, and whatſoever might batter you and command your defences.

Take good heed that the fortreſſe be well diſpoſed to reſiſt the aſſault of the enemie; which is, that the flanks (whether they be high or lowe) may diſcover, and not be diſcovered but by imbocking, that is, the canons mouth: that the countermines be well diſpoſed and convenient; that the counterſcarp (which is the buckler of the fortreſſe) be flanked, ſheltred, and ſpacious; that the caſemats be ſecured and well ſheltred, ſpacious, and fit to diſcover the plain of the oppoſite bullwork, and within the moat; that the ſally-ports be ſecured, ſheltred, lowe, and commodious; that the parapets be of earth or unburnt brick, and that the platforms for the ordinance be made handſomely and even, that ſo the pieces may eaſily be moved and removed into their places, ſpacious for the motions, pioners, and canoniers, and to contain the munitions.

The number of the ſouldiers of your garriſon you are to proportion according to the bigneſſe of the place, to the outworks which you would hold, to the labour of the retrenchments which

you ſhall think fit to make, and to the ſallie which ſhall be requiſite.

The Governour muſt be courageous and expert by long practice in aſſaulting and defending, having been beaten to ſuch ſervices.

The ſouldiers ſhould be men of choice, reſolute, ſtrong, obedient, and faithfull.

The quantitie of proviſions as well for victuall and medicines as armes, muſt be meaſured by the time which you ſhall conjecture that the ſiege may continue.

And their qualitie muſt be for the victuall of ſorts of grain, principally pulſe, powdred fleſh, ſalt-fiſh, cheeſe, butter, ſuet, oyl, ſalt, freſh water, wine, beer or cider, vineger, candles, torches, ſhip-pitch, good ſtore of coals, and plenty of wood for the ovens, for the corps-du-guard, and for houſhold uſes.

To tend them which are hurt and ſick there muſt be phyſicians, chirurgeons, & medicaments as well for contageous diſeaſes as thoſe which are ordinarie, and for wounds; and good ſtore of old linen.

A good quantitie of defenſive weapons, as corſlets, taſſes, morions, headpieces of proof, curaſſes, targets both proof and ordinarie: ſtore of armes offenſive, as well ſharp, as pikes, [a] lances, halberts; as fire-weapons, as great and ſmall Artillerie, morters great and ſmall, muskets, harquebuſes a crock, callivers, cartouches, croſſebars, ſhot, bullets of iron and lead, lanterns, creſſets, lights, match, powder of a great, mean, and ſmall grain.

[a] *when they were in uſe.*

For the fires as well ſimple as compound, for the ſimple, powder, ſaltpeter or ſalnitre, co

coal of willow or ſallow, campher, ſulphure, re-
ſine, peter-oyl, linſeed-oyl, ſpike-oyl, tarre, Ve-
nice-turpentine, colofonie of Spain, black pitch,
Greek pitch, Spaniſh pitch, wax, tallow, varniſh
in the ſeed, maſtick, ſal armoniack, common ſalt,
quickſilver, vitrioll, *aqua vitæ*, vineger, frankin-
cenſe, wood in abundance, of vine-trees, fir-trees,
pines, oſiers, hemp-ſtalks, of laurell, olive, and
other fat and drie woods: for compounded
fires which are uſed at an aſſault, pitcht ropes,
fire-balls, granadoes, fire-wreathes, and fire-
trunks.

Good ſtore of maſter founders, armorers, car-
penters, maſons, forgers, miners, ſaltpeter-men,
powdermakers, millers, cartwrights.

Inſtruments or tools to make carriages for
the Artillerie and musket ſtocks; ſome to cut,
as hatchets, hooks, ſawes, axes, adzes; to knock,
as beetles, hammers, mallets, crows of iron, and
handſpikes of wood; to quench the fire, as lad-
ders, buckets of wood and of leather, portable
coaes or tubs, ſquirts, iron hooks or cromes; to
manage the earth, as cutting ſpades, hand-bar-
rows, pickaxes, ſhovels, ladles, mattocks,
wheel-barrows, tumbrels, ſcuttle-baskets,
maunds.

Wood for the carriages, beds for the ordi-
nance, palliſadoes, barricadoes, bridges, barques,
sauceidges, hurdles, gabions, piles, ſummers, joyſts
and ſmall joyſts.

Metals; as copper, tin, lead, iron.

Materials for building; as ſtone, brick, lime,
clay.

Good ſtore of linen cloth; cordage, tow,
needles and thred.

You muſt agree with your friends without o
ſome means to give them advertiſements ordin
rily when you ſhall be ſo ſtraitly ſhut up, as yo
muſt have recourſe to ſignes.

When the enemie ſhews himſelf to begin h
enterpriſe and to beſiege you, his Armie being
move divided by reaſon of the diverſitie of occ
ſions, you muſt labour to diſcommodate him
much as may be.

During the time that he ſhall be buſied in ſhu
ting up the town, in taking and cutting off t
paſſages, it might happen that (in diſtributing
his troops) ſome one may fall into your hand
then lay hold on the time and occaſion, of the
tuation, of the commoditie and favour of yo
outworks, never abandoning them but upon gre
conſtraint.

Then in ordering of his quarters you muſt ha
an eye, that even upon this occaſion you mig
moleſt him; nevertheleſſe if you conceive th
by ſuffering him to go on ſecurely, you ſhou
have means afterward to offend him to great
effect, you may defer it untill then: for thoſe di
commodities which ſucceed with loſſe of th
which one poſſeſſeth, bring double dammage
Nevertheleſſe you muſt take great heed not t
ſtay ſo long as that he be fortified, whether it be i
his trenches, quarters, or lodging of his munition
and Artillerie.

When he ſhall begin his trenches, and mak
platformes to plant his ordinance to batter you
hinder him and moleſt him with all your powe
(which you ſhall hardly do if he hath earth an
wood) obſerve the imperfections of his works
whether they be ſtraitned or ſcant, imbocked

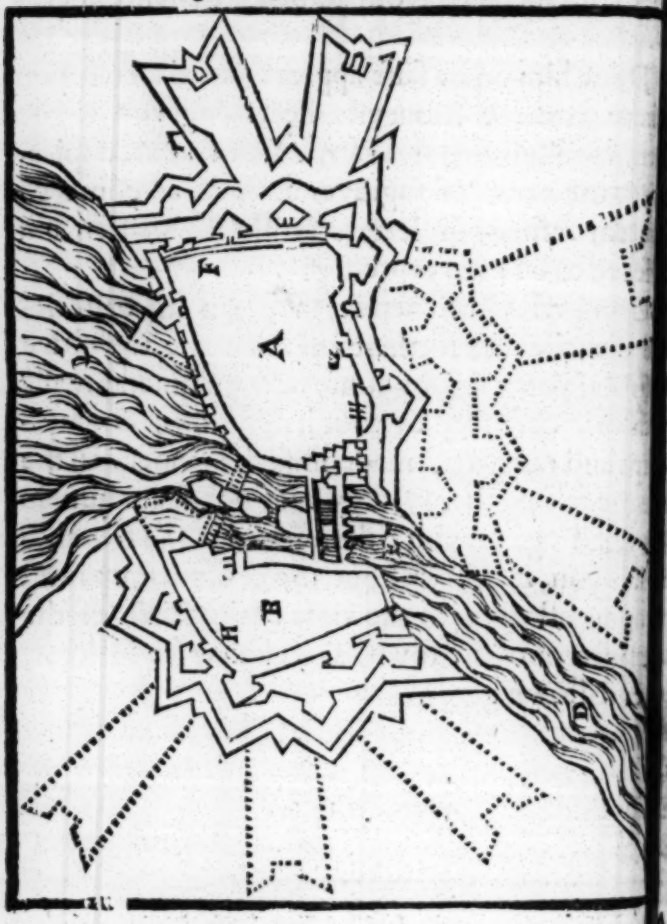
no

ot well ſheltred, ill flanked, ill conducted, ill uarded, and endeavour to make benefite there- f.

Draw him on by falſe appearances to aſſault you here you are ſtrongeſt, he taking you to be ere weakeſt, and this by means of aſſured ſpies, nder the name of fugitives or ſuch as come to im for refuge, or letters artificially written and ffered to be intercepted.

Compell your enemie to begin his batteries d trenches the furtheſt off from the town that ſſibly you can, by ſome retrenchments made ithout, defended by your half moons, counter- arps and ramparts, made in ſuch manner as (the emie taking them) they may not ſtand him in y ſtead againſt you; therefore all the trenches hich you make without the counterſcarp muſt open all along to the view of the flanks of the velines, or of the town, as you may ſee in the fi- ures following.

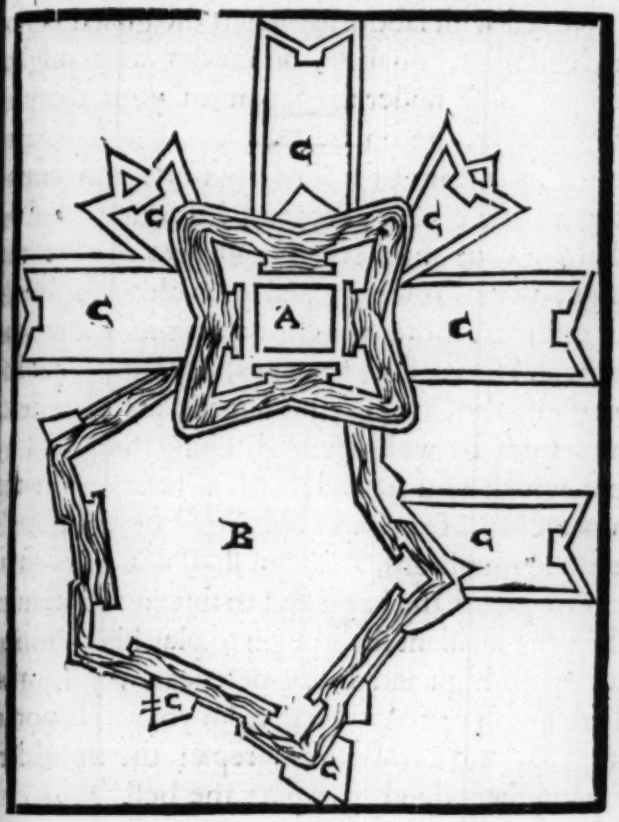
The plat of Geneva. 1611.



A. *The town.*
B. *S. Gervaſe.*
C. *The lake.*
D. *The river Rhoſne.*
E. *The Iſle and the bridges,*

The lines repreſent the fortifications made, the pricks ſhew the deſignes of thoſe which are to be made.

The plat of Gulick, fortified by Prince Maurice after the taking of it.



A. *The caſtle.*
B. *The town.*
C. *The retrenchment made about the town.*

For your ſallies, take good heed to the time whether it be fitting or contrarie; to the occaſion, as when the enemie is wet, ſtiff with cold ſleepy, tired with labour, or when the guard is not in ſuch number, qualitie, and order as it ought. Keep your ſelf under the favour of your rampart and Artillerie, go on in good order and at unawares, by means of your ſally-ports and counterſcarps, place your pikes and halberts to ſuſtain a charge, your muskets and callivers to give the charge, your fireworks and granadoes to break and diſſipate thoſe which are in the corps-de-guards and forts of the trenches, favouring the Infanterie by the Cavallrie, principally at the retreat which muſt be well ſecured, being ſuſtained by thoſe which you have left as a reſerve on the counterſcarp. Be not ſo prodigall of your ſoldiers and munitions, that you ſhall not have ſufficient to guard the town and to ſuſtain the aſſault. When the aſſailant ſhall begin to play his canon to batter your high and lowe defences, ply him on all ſides with your Artillerie from your Bullwork, ramparts, and cavalleroes; repair the ſhoulders of your flanks and parapets the beſt you can. Make new places of retreat and new flanks, principally concealed ones.

When he ſhall pierce your counterſcarp or open your moat, he will at the ſame time batter your walls; if he have forgotten nothing of the diligence which is requiſite, you ſhall hardly hinder nor offend him. But if he do miſtake, ſeize you on the occaſion, and have a watchfull eye, and if his Artillerie be diſcovered, you ſhall endeavour to diſmount his pieces, to kill his canoniers to ſpoil his munitions; if it be ill fortified, make

furious ſally upon it, to diſmount and nail it up, making uſe of your Artillerie and muskets.

If the aſſailant be well experienced, whileſt he battering you to make a breach, he will batter all the low flanks which flank the place where he intendeth to give the aſſault (the high flanks being already taken off before the Artillerie was brought on the counterſcarp) but not before he become maſter of the moat, if it be drie, or of the counterſcarp if the moat be full of water; making the platform for the Artillerie upon the gallerie which pierceth the counterſcarp to enter the moat, keeping the boats and galleries to paſſe over the moat ready to lay ſuddenly when the time and occaſion ſhall be fit to give the aſſault; or elſe to plant them during the batterie under favour of the Artillerie and musket ſhot. Now, againſt all this, an expert Governour will keep his flanks hidden, which being opened unawares will much endammage the aſſailant. who (having made a breach) will cauſe it to be viewed by armed men (on which you muſt not ſpare your faulconet ſhot, nor that of the harquebus a crock) and ordinarily they are of the moſt able and valiant men.

The breach being viewed, he will come to the aſſault, for which you muſt order your ſelf to give combat and reſiſt him, either by handblows or retrenching your ſelf, or both; by handblows, ſo ſoon as he ſhall begin to ſhew himſelf and become a mark for you, beginning to mount up to the breach, repulſing him by armed men, which you ſhall have ſelected before the aſſault, being reſolute and hardy, which muſt headſtrongly withſtand the firſt furie; which will either cauſe the enemie to retreat, or at leaſt you ſhall notably

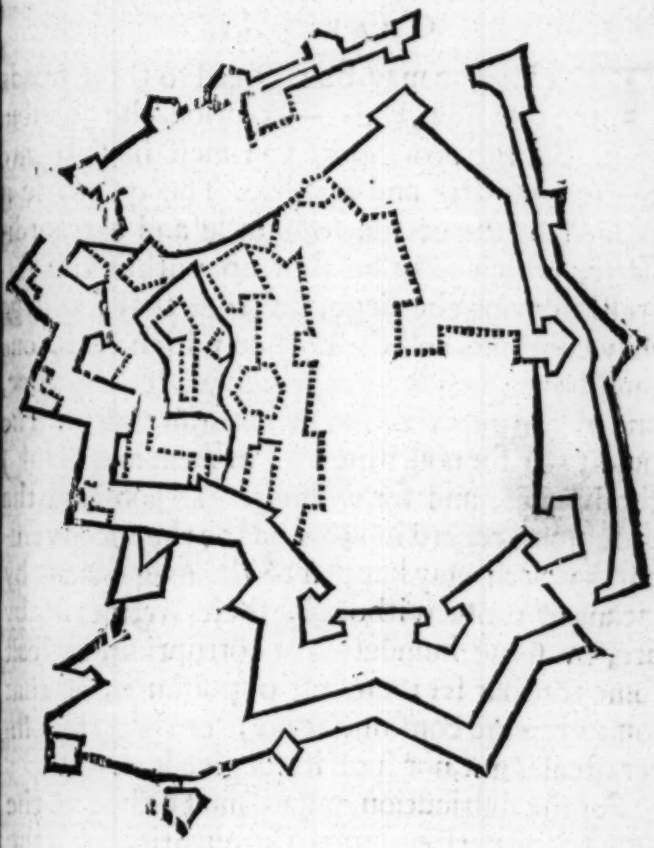
miſchief

miſchief him. You are to make uſe of engine and inſtruments fitting to hinder the enemie fro climbing up to the breach, as calthrops ſtrewe upon the place, rowling leiſts, beſet with nai and ſquibbes, morters, ſtone-pieces, and engine to caſt granadoes, fireballs, cartouches, &c. Mine muſt not be forgotten, nor fire-works, as fire trunks, pots, moveable mines, fire-garlands, &c having carefull regard how, when, where, an from whence you caſt them, doing it to goo purpoſe.

If the enemie aſſault you by degrees, or th he make his batterie ſo leiſurely that he give yo time to retrench your ſelf, make your retrench ment well flanked and commodious, in ſuch fo that by it you may reſiſt him. To effect this, ought to be difficult to be expugned, ſo flanke as it may be defended on the front and flank facile for ſallies, having before it a broad an deep moat with a counterſcarp and covert wa having the rampart ſtrengthened by palliſado which go along the outſide of the line, enclo ſures of the camp, and gabions: And by thi means you ſhall draw the buſineſſe to a gre length: for he muſt draw up his Artillerie upo the breach, after that he be lodged upon it, h muſt make a new batterie, a new overture, new ſaps, mines, and chambers, which will give yo leiſure to make new retrenchments, and to gai and prolong the time, as the Hollanders did a Oſtend, and in many other places.

Th

The Plat of Oſtend, with the retrenchments. 1604.



The lines repreſent the fortreſſes of the town, and the pricks the retrenchments.

Of

Of the defence of fortreſſes againſt famine.

Chap. XI.

THis defence may be reduced to three heads the proviſion, the conſervation, the diſtribution. For the proviſions, you muſt have regard to the quantitie and qualitie. The quantitie is judged by the perſons ordinarie and extraordinarie, which may be ſhut up within the fortreſſes during the ſiege, the time that the ſiege may continue, and the portion which every one muſt have; beſides that which waſteth by time and by the imperfection of naturall things. The qualitie is for nouriſhment (as meat and drink) for diſeaſes, and for wounds. To conſerve the proviſions, regard muſt be had to the inconveniences which may happen to the magazines, by means of thoſe without by their Artillerie, by fire, by ſome inundation or corruption, or leaſt ſome traitour ſet it on fire, or poiſon it, or that ſome vermine conſume it not, or that the officers ſteal it not, nor ſpoil it, nor give it away.

For the diſtribution, regard muſt be had to the time, to the perſons, and to the quantitie. To the time, when you ſhould begin to open the publick proviſions, which is, when the private are conſumed, knowing the perſons and munitions of every family. To the perſons, who for the difference of their condition muſt be diverſly dealt with, according to their eſtate and qualitie. To the quantitie, which muſt be meaſured by that which every day one perſon ſhall neceſſarily require for nouriſhment; having regard to their ſex, age, exerciſe, and diſpoſition.

Of

Of releeving places beſieged.

Chap. XII.

IN the releeving of fortreſſes, you muſt conſider the means to effect it, or to hinder it.

To effect it, either openly or ſecretly, having regard to the place, to the enemies retrenchments, and to the releef.

To the ſituation of the place, which may be commodious and facile by reaſon of the open champains and freedome from impeachments; or diſcommodious and difficult, by reaſon of bogs, rivers, woods, and mountains.

To the enemies forts which are about it, as defences by palliſadoes, gabions, moats, trenches, and redouts; who may either remain within his trenches, or go forth into the champain to beat off the releef.

For the releef, it muſt be guarded by a good convoy, becauſe otherwiſe the enemie might charge and rout it, pillaging the munitions, hindring the return, cutting off their way, being the ſtronger. You muſt know the means, the time, the ſtratagems, and the paſſages by which the releef may be conducted and introducted into the place, carrying with you ſufficient proviſion of things neceſſarie, for the victuall, for the armes, and for all that concerneth the furtherance and execution of the releef, as pioners, boats, barks, and other engines, to paſſe rivers and marſhes.

You muſt make good choice of the troop and groſſe of ſouldiers which ſhould execute the releef, as, that the ſouldiers be well ſelected out of the ancienteſt, and that the officers be able and willing courageouſlly to perform all that is to be done,

done, to execute the enterprise infallibly, or to re
treat honourably, or there to sell their lives at
dear rate.

A releef may be hindred, either by attendi
it within the trenches. or else by advancing t
wards them to give them battaile, and to oppo
their passage, abandoning the siege to go with
the forces, or with part of the Armie, leaving (
the mean time) the siege maintained, and th
trenches manned.

Of French Artillerie.

Of foundings, mixtures, and measures of ordinance.

Chap. XIII.

IN the founding of ordinance, to 100 pound
fine copper, you are to adde 20 pound
bell-metall; or for want of bell-metall, adde
pound of soft tin.

Or else, to 100 pound of copper, adde 1
pound of latin, and 8 pound of soft tin.

In the founding of ordinance, in regard of th
waste, in every 6 pound of metall you are to add
1 pound over weight.

A singular care must be taken of the meltin
and mixing of metals, for the inward neatnesse o
the pieces To this end the material must b
good, so must the earth for the moules; being
well beaten and through wrought with hair and
flocks. The moules, models and cilinders well
nointed and greased with good tallow, and bound
with hoops of iron, well and throughly nealed,
well placed and set. The trunions must be so just

placed, as the piece may be as in ballance on them, weighing almoſt equally forwards to her muzzel, as backwards towards her breech, that ſo the canonier may without trouble mount or im-baſe her.

The piece muſt be ſtrong about the trunions, or thereabout ſhe ſuffereth the greateſt force, and firſt moving.

The touchhole muſt be of ſteel, that ſo the piece be not made unuſefull ſo ſoon as if it were of metall, and muſt be cloſe to the breech.

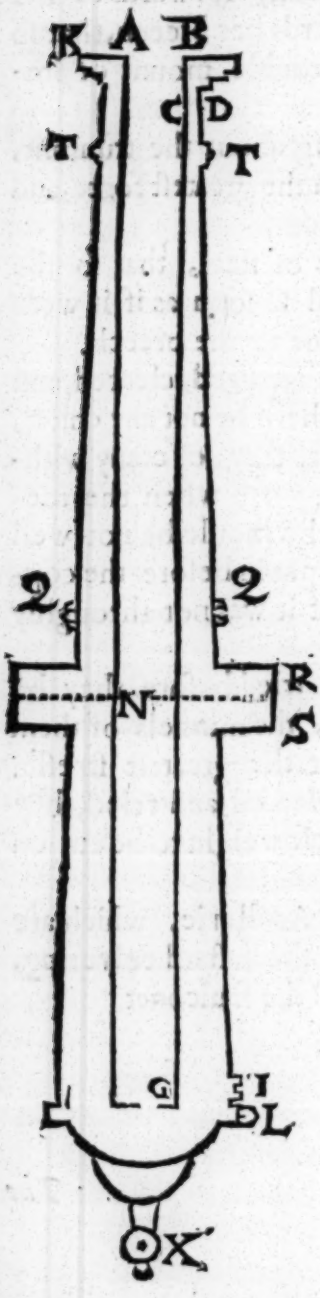
The pieces muſt be well repaired, cleared, and tried, having regard that there be not any chink, hole, hony-comb, crack, rift, flaw, or crany within them; which uſually hapneth when the metall is run too cold, or that the moule be not well sealed, or that the tin was put in before the copper was well melted, or that it was not throughly mixed or incorporated.

The pieces ought to be tried before they be mounted on their carriages, the muzzels of them mounted, for ſo they bear the greateſt ſtreſſe. When they be ſo repaired, cleared, and tried, they are to be weighed, and their weight to be cut on their breech.

There be ſix calibres of Artillerie, which are the canon, the culvering, the baſtard culvering, the minion, the faulcon, and the faulconet.

The

The names of the parts of a canon.



A. B. *The diameter* *the muzzel, concav* *or bore of the piece.*

C. D. *The neck.*

G. I. *The thickneſſe* *the metall at* *touch-hole or chamb*

G. B. *The length of* *concave or cilinder* *the piece.*

R. S. *The diameter* *thickneſſe of the tru* *cion.*

K. *The muzzel ring* *freeſe.*

N. A. *The vacant cil* *der from the charge* *the guide of the ſhot.*

N. X. *The chamber.*

L. *The baſe ring, and* *ſight upon it.*

G. X. *The breech.*

X. *The caſcabell or pu* *mell.*

T. *The aſtragall or co* *nice ring.*

Q. *The reinforced rin*

I *The touch-hole.*

Of weights.

The pound (mark weight) consisteth of two marks, the mark of eight ounces, the ounce of eight drams, the drama three penie weight, the penie weight foure and twenty grains. *This weight cannot be my weight, for that hath but 20 penie weight in the ounce, and mine hath 24.*

Of measure.

The fathom containeth 6 foot, the foot 12 inches, the inch 12. lines. *But the custome in England is to divide the inch into eight equall parts, which I follow.*

The measures of the parts of a canon, and the use thereof.

The diameter of the bore of the canon is six inches and one sixt part of an inch.
The diameter of the bullet six inches.
The vent or aire for the bullet to play one sixt part.
The bullet weigheth 33 pound and one third part, which is called the Calibre of the canon.
The metall is two inches thick at the neck, and six at the breech.
The cilinder or concave is nine foot long, and equally wide in each part of it.
The whole canon is somewhat longer then a foot. *Our English founding of ordinance differeth from the French proportions, as appeareth in Mr Nortons Gunner, page 53.*

The diameter of the trunion is ſix inches.

The vacant cilinder or guide is five foot an an half.

The reinforced ring is diſtant from the muz zell ring foure foot and a half.

The thickneſſe or height of the muzzell rin is five inches.

The coronice ring is within half a foot of th muzzell ring.

The ſight of iron is placed on the flat ba ring.

The metall of the piece weigheth abo 5600 pound.

Her carriage for the field is fourteen fo long, and the axletree ſeven.

The canon mounted on her field carriage almoſt nineteen foot long.

The powder for her charge weigheth eig teen or twenty pound.

The ordinarie obſervation for all pieces i That the charge of powder be at leaſt the mo tie of the weight of the bullet, and ſo to tw third parts, which is rather better.

The canon may be laden ten times in houre, and 120 times a day.

She ſhoots point blank almoſt ſix hundr [a] paces.

[a] Obſerve that paces are here underſtood to be onely ſteps: otherwiſe it were impoſſible.

Her platform muſt be fifteen foot broad, a 20 foot long for her reverſe. The formoſt t foot are to be of plank, and the reſt of hurdl if plank be wanting.

There muſt be twenty horſes to draw a c non. A waggon drawn by foure horſes carrieth thouſand or twelve hundred pound weight; it about ten or twelve foot long in the body, a

he waggon with the horſes about fifty foot;
nd their breadth about the axletree is [b] ſix
oot.

[b] *The breadth of the carriages, and of the waggons ought to be alike at the axletree, becauſe they are to go in one and the ſame rut.*

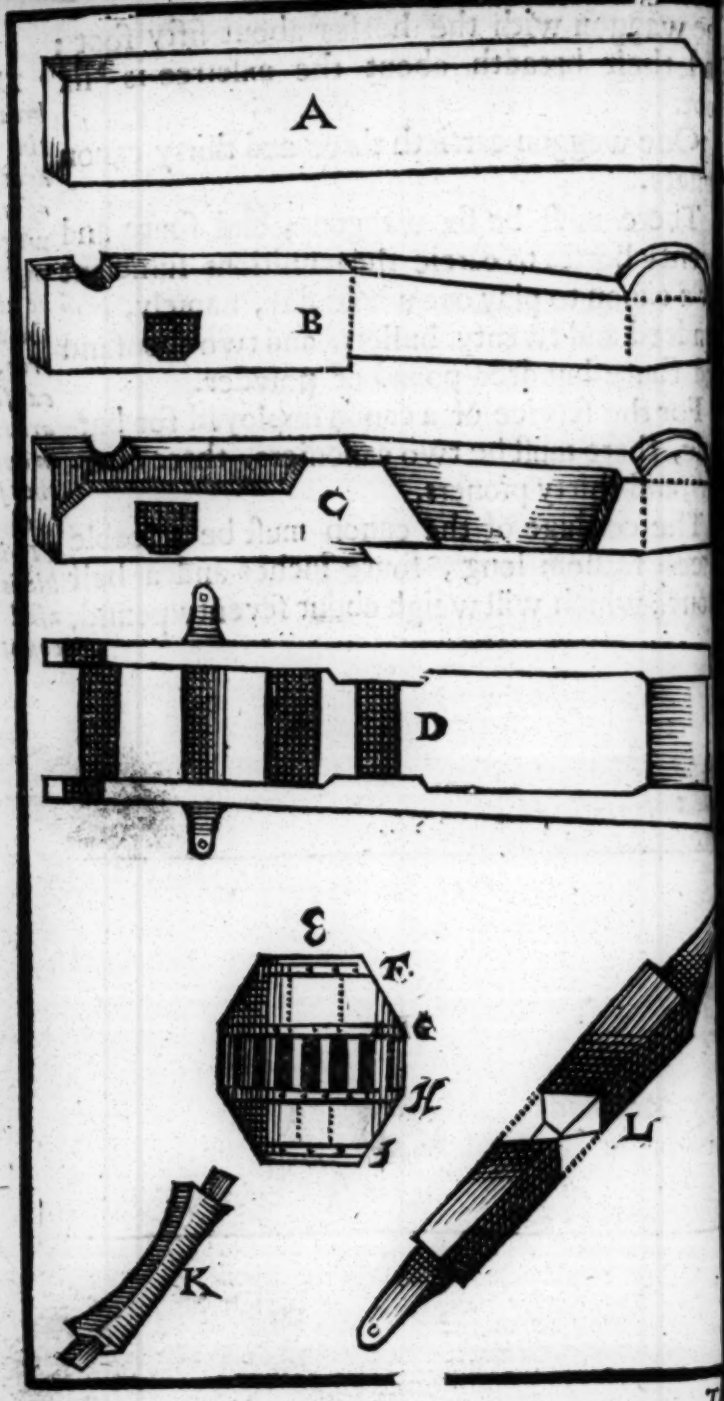
One waggon carrieth three and thirty canon ullets.

There muſt be ſix waggons, and foure and wenty horſes to carrie the munitions ſufficient or a canon to play one whole day, namely, one undred and twenty bullets, and two thouſand nd foure hundred pound of powder.

For the ſervice of a canon imployed for batrie, there muſt be two canoniers, three charers, and thirty pioners.

The cordage of the canon muſt be a [c] cable fteen fathom long, foure inches and a half bout: which will weigh about ſeventy pound.

[c] *This cable is not uſed in all countreys.*


A
B
C
D
E
F
G
H
I
K
L

The names of the parts of the carriages and wheels for the Artillerie.

. *A plank for the cheeks or ſide of the carriage 14 foot and an half long, one foot and an half thick, and one foot eight inches broad for the canon.*

. *The outſide of the cheek.*

. *The inſide of the cheek.*

. *The carriage being* [a] *13 inches broad within the work at the head, and 18 at the tail.*

. *The axletree 7 foot long.*

. *A ſpoke 14 inches long between nave and felloes, 4 inches and an half thick in diameter.*

. *The nave of 20 inches long from* E. *to* I. *and as much in diameter over againſt* G. *in* F. 17. *and in* I. 14.

G. H. I. *Foure hoops of iron.*

[a] *Note that the canon, a little before, is ſaid to be 6 inches thick of metall at her breech, and the*

meter of her bore ſix inches and one ſixt part: ſo then, the carriage ght to be ſomewhat above 18 inches wide for the breech, bed and 13 and ſo the tail muſt be ſo much the wider of courſe.

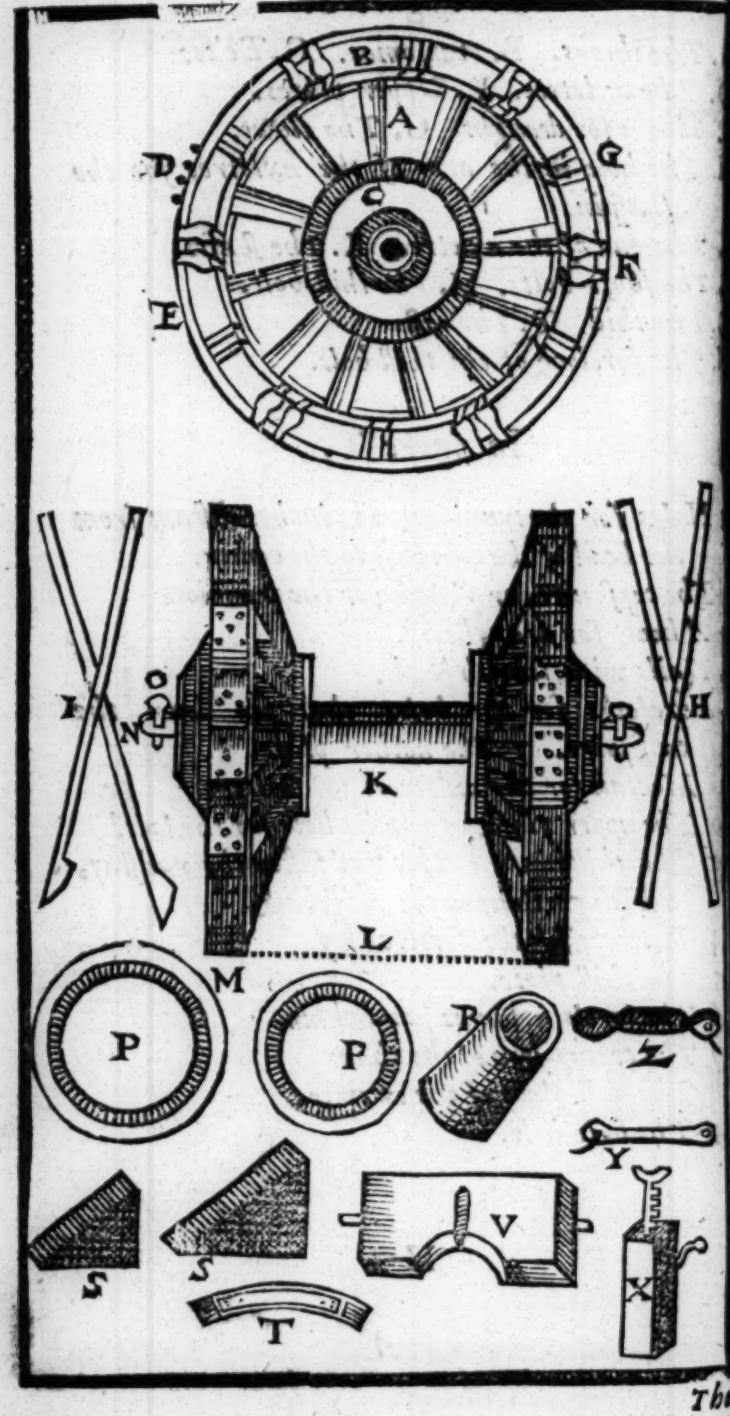
N.
S.
T.
A
B
C
D
E
F
G
H
I
K
L
M
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19

In the figure S.

A. *The cheeks.* B. *Tranſomes.* C. *Bolts.*
D. *The axletree.* E. *Upper plates.*
F. *Hooks for draught.* G. *The clowt.*
H. *The hole in the arm of the axletree for the lintſpin.*
I. *The end of the axletree.* K. *The ſhafts.*
L. *The ſhaft-bolts.* M. *The thill-bolt.*
O. *The thill.* Q. *The reſt.*
N. *The forelock of the thill bolt.*

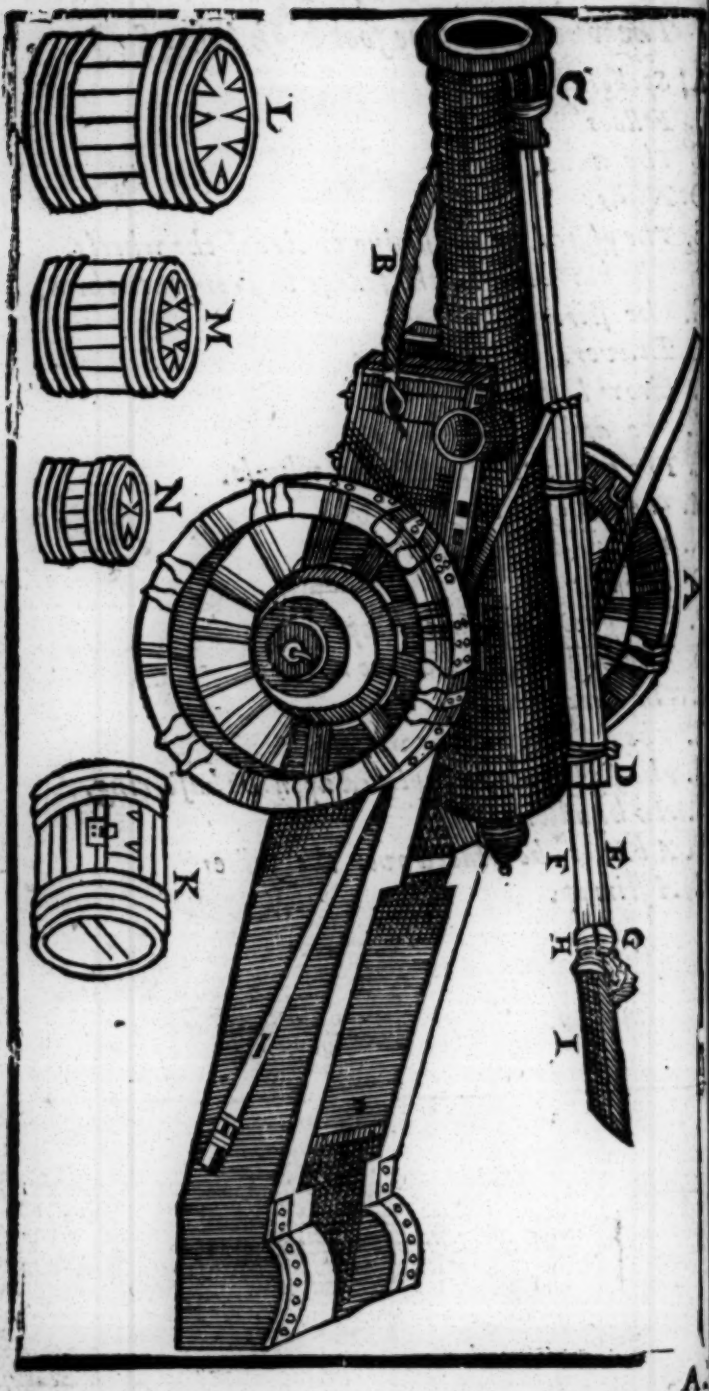
In *figure* T.

1 *Holes for the trunions, 21 inches diſtant from the head of the carriage to the center.*
2 *The capſquire, or plate over the trunnion.*
3 *A hook for draught.*
4 *Nails with ſmooth heads.*
5 *Forelocks for the bolts that pin down the capſquire.* 7 *The nether plate.*
8 *Mortais for the axletree.* 9 *Bolts.*
10 *The upper plate.* 11 *The hole for the bolt.*
12 *The thill.* 13 *A hook to faſten the rudſtay, which goeth upon the horſeback.*
14 *The hole for the forelock key.*
15 *The thill plate.*
16 *The forelock, pinnes, and chain.*
17 *The cramp-iron of the chain.*
18 *The tail-plate of the carriage.*
19 *The bolt-hole.*


B
A
C
D
G
E
F
I
O
N
H
K
L
M
P
P
R
Z
Y
S
S
V
X
T

The wheels are five foot high being ſhod.

A. *Spokes.*
B. *Felloes.*
C *The nave.*
D. *Nails.*
E. *The plates for the ſhoing or tire of the wheels.*
F. *The barres over the felloes to ſtrengthen them.*
G. *The ſtirrops.*
H. *Leavers or handſpikes.*
I. *Crow leavers.*
K. *The axletree.*
L. *The diſtance between the wheels.*
M. *The rut of the wheel.*
N. *The end of the axletree.*
O. *The lintſpin.*
P. *The great and ſmall hoops.*
R. *The boſſe of iron for the nave,*
S. *The great and little coins.*
T: *The dowledge of the wheel.*
V. *The ſight rule, to be placed upon the baſe-ring.*
X. *An handſcrue.*
Y. *A bar, to be placed over the felloes.*
Z. *A ſtirrop.*



A.

A. *A canon mounted.*
B. *The cable.*
C. *The head of the ladle and ſpunge.*
D. *Thongs to tie the leavers, ladle, and ſpunge.*
E. *The ſtaffe of the ſpunge.*
F. *The ſtaff of the ladle.*
G. *The ſpunge.*
H. I. *The ladle of braſſe.*
K. *The budge-barrell.*
L. *A caſque of corn-powder.*
M. *A caſque of fine powder.*
N. *A barrell of priming-powder.*

---

of

Of the great culvering.

The diameter of her bore is foure inches and five sixt parts.

The diameter of her bullet, foure inches, and two third parts.

The bullet weigheth 15 pound and a quarter.

Her metall at her neck is one inch thick and three fourth parts, and at her chamber foure inches and five sixt parts.

Her cilinder is nine foot & foure inches long.

From the center of the trunions to the touch-hole is three foot ten inches.

The vent or aire for the bullet to play is one sixt part.

Her charge of powder is ten pound weight.

She shoots point blank * 800 paces.

She may be laden ten times in an houre, and 120 times in a day.

Her metall weighs about 4000 pound weight.

She requireth 17 horses to draw her.

A waggon carrieth 66 of her bullets.

She must have 120 bullets a day, and 1200 pound of powder; and for the carriage of her munitions for a day, three waggons and twelve horses, 24 pioners, two ordinarie canoniers, and two extraordinarie.

The cordage of a great culvering is a cable of twelve fathom long, and foure inches about, weighing about 55 pound.

* *Understand paces as hath been observed before for the canon.*

Of the bastard culvering.

The diameter of her bore is three inches and three fourth parts.

The diameter of her bullet three inches and two third parts.

The

The vent or aire for the bullet to play one twelfth part.

The metall at her neck is one inch and one fourth part thick, and at her chamber three inches and three fourth parts.

Her cilinder is eight foot seaven inches in length.

From the centre of her trunions to her touch-hole is three foot six inches.

Her bullet weighs seaven pound and a quarter, and her powder five pound.

She shoots point blanck [b] 1000 paces.

[b] *Observe as before.*

She may be laden 140 times in a day, which is about twelve bullets in an houre.

Her metall weigheth about 2500 pound.

She must have thirteen horses to draw her.

A waggon carrieth 140 of her bullets.

Her munitions for her to play one whole day, are 140 bullets, 700 pound of powder.

She must have two waggons and eight horses to carrie her munitions for one day, twelve pioners, and two canoniers.

The cordage of the bastard culvering is a cable of [c] six fathom long, and three inches and an half thick, weighing about 45 pound.

[c] *Here must be a mistake: for if the cable for the great culvering of 12 fathom long, and 4 inches thick, weigh but 55 pound, how can this, being but 6 fathom long, and 3 inches and a half thick, weigh 45 pound? I conceive the mistake to be in the length of the cable, which should be longer, rather 9 then 6 fathom.*

Of the minion.

The diameter of her bore is two inches and three fourth parts.

The diameter of her bullet is two inches and two third parts.

The

The vent for the bullet to play is one twelfth part.

Her metall is one inch thick at her neck.

At her breech two inches and three fourth parts.

Her cilinder is eight foot long.

From the center of her trunions to her touch-hole is three foot five inches.

Her bullet weighs three pound and an half, and her charge of powder two pound and an half.

She ſhoots point blanck 1400 paces.

She ſhoots 160 bullets a day, which is about thirteen each houre.

Her metall weighs about 1350 pound.

She muſt have nine horſes to draw her.

A waggon carrieth 226 of her bullets.

She muſt have 160 bullets, and 400 pound of powder for a dayes batterie.

One waggon carrieth her munitions for one day.

She is ſerved with ſix pioners, and two canoniers.

Of the faulcon.

The faulcon may be laden fifteen times in an houre, which is 180 times a day.

Her bullet weighs one pound and an half, the charge of her powder one pound, and her metall eight hundred pound.

She muſt have five horſes to draw her.

One waggon carrieth her munitions for two dayes.

She is ſerved with foure pioners, and one canonier.

Of

Of the faulconet.

The faulconet may be laden about 250 times a day, which is about twenty times each houre.

Her bullet weigheth three quarters of a pound, and her charge of powder an half pound, her metall five hundred pound.

One waggon carrieth her munitions for 3 dayes.

[a] One horſe draweth her.

She is ſerved with 4 pioners and one canonier.

[a] *If the faulcon which weigheth eight hundred pound, requireth five horſes to draw her, the faulconet weighing five hundred pound, will require three horſes.*

Of the harquebus a croc.

The harquebus a croc may be laden 300 times a day, which is 25 times each houre.

Her bullet weigheth 3 ounces, and her charge of powder 2 ounces.

One waggon carrieth 14 hurdles of 10 foot long and 6 foot broad. It may carrie 12 doſen of pikes, which are uſually about 18 foot long. It carrieth 300 ſhovels, pickaxes, or ſpades.

Theſe waggons are made with boards on the ſides and bottome, like tumbrels, to pack up thoſe inſtruments within them, and alſo many other ſmaller ones, as ſawes, chopping-hooks, hatchets, hammers, chizzels, crows of iron.

It may carry 10 pieces of a bridge of bul-ruſhes. Theſe pieces are made after this manner, every piece hath 10 bundles of cane-reeds bound together with cords as much as is poſſible, and then well ſewed within a courſe cloath; ſo as they become 10 ſacks full of reeds; being a foot in diameter, and 6 foot in length. They are faſtned with good cords upon a hurdle of 10 foot long, and 6 foot broad.

How

How the Artillerie is to march.

Before the Artillerie do march, certain commiſſaries, canoniers, the waggon maſter, and certain pioners muſt go before to accommodate the wayes.

The ſmall pieces muſt march before, then all the greater ones, then three wagons; whereof the firſt is to carrie a barrell of greaſe, and all the ſmiths tools in a cheſt. The ſecond, all the wheelwrights and carpenters tools, the gins the leavers and handſcrue to raiſe the pieces. The third is to carrie the anvile, the bellows, and other ſmiths tools. Then follow the conductours and canoniers to guard them.

Then the waggons laden with bullets, powder, and other munitions.

All the canoniers muſt accompanie the ordinance, every one near his own piece.

The Artillerie and munitions muſt be quartered in a place ſufficiently ſpacious, which muſt alwayes have the front towards the enemie.

Round about the Artillerie and munition there muſt be a place large enough to contain the guards.

Of the offices of militarie men.

Chap. XIIII.

Of the ſouldier.

He muſt be armed with ſuch armes as his captain ſhall appoint him; for he knoweth better then himſelf what armes are moſt fit for him.

He muſt ſhew himſelf deſirous to make manifeſtation of his courage, but muſt not therefore at any time go out on any action without the expreſſe command of his chiefs, making it appear that he is diſcreet as well as valorous.

His eating and ſleeping muſt be regulated according to his leiſure, not according to his will.

He muſt not be a mutinier, neither muſt he change his companie without great reaſon, nor depart without leave obtained and authenticall certificate of his faithfull ſervice. Good ſpirits are not known but upon occaſions, which offer not themſelves every day: beſides that, a private ſouldier which deſireth to attain to ſome place of command, hath need of a long time, to gain experience ſufficient to render him worthie, and to make his abilities known to ſuch as can advance him.

He muſt ſtudy to know the uſe and managing of his armes, the duties of a ſouldier, the motions of companies, his marching, his quartering in the field, to make his guards, and place his ſentinels, to underſtand the beats of the drum, to make a guard for his ſuperiours.

The ſouldier ſhould not enroll himſelf under a captain of mean reputation, or one that is cove-

tous, leſt he looſe his labour and time, to prevent changing. So alſo a Captain ought not to receive a ſouldier without knowing him, leſt he happen on ſome mutinier, coward, feeble or diſeaſed perſon.

Of the dutie of the Lanſpaſſadoes and Appointees.

They are to eaſe the Corporals, and to be at their Lieutenants and aides in time of danger: they are alſo rounders and ſentinell-perdues, in caſes of neceſſitie, but not otherwiſe.

Of the Corporall.

He hath the command of his ſquadron, and is to teach them whatſoever is neceſſarie for a ſouldier to know and do. He is to lodge them by cameradoes, to prevent quarrels and diſorders by admoniſhing them, or acquainting the Captain therewith; for to chaſtiſe them he hath no power, unleſſe it be by vexing them with ſtanding ſentinell. He muſt have a liſt of his ſouldiers, and muſt give notice to his Sergeant when a ſouldiers name is croſſed out. He is to diſtribute the victuall, bullets, match, and powder to the ſouldiers of his ſquadron; to know which are the moſt experienced of them, that ſo they may be imployed in the watches and actions of greateſt importance; to have an eye to their lives and manners, to take care of the baggage and money of ſuch as are hurt and ſick, cauſing every man to husband his pay taken at muſters. Being on the guard, he muſt be vigilant and ſuſpicious: he muſt place the ſentinels where the Sergeant major or his Captain ſhall have directed him: he muſt releeve them him-

himſelf, and muſt ſend a Lanſpaſſado, or one whom his Captain ſhall appoint, whereof he is alwayes to have two, to viſit them. He muſt attend his rounds and counter-rounds before his corps-du-guard, which muſt give him the word: and were it the Generall of the Armie himſelf, the ſentinels ought not to ſuffer him nor any perſon to approach them, without charging their pike or preſenting their musket, the match cocked; and if it be the grand-watch or other troop, to ſtay them untill the Corporall come; who muſt never go alone out of his corps-du-guard, but with three or foure to accompanie him. He muſt advertiſe the ſentinels how to demean themſelves upon the diſcoverie of the enemie, either to give an alarm, or elſe to give notice without making any noiſe. The ſentinels muſt never remove themſelves, untill the Corporall releeve them, or that they be conſtrained by the enemie; and in ſuch caſe they are to retreat to the corps-du-guard, as the corps-du-guard (being forced) are to retreat to the quarters, according to the Captains or Sergeant majors inſtruction.

He is to viſit the ſouldiers entring the guard, to know whether they be ſufficiently provided of powder, bullets, and match, viz. one pound of powder, two pound of bullets, and five fathom of match.

He muſt cauſe reſpect to be given to the corps-du-guard, and ſilence to be kept, whether it be about the gates or the walls, that ſo the noiſe may not hinder the hearing of the adverſements of the ſentinels. He is to walk before his corps-du-guard, or to cauſe a Lanſpaſſado

to do it. He muſt keep fire day and night, to light the matches, and muſt take care to ſee the corps-du-guard provided of wood, coals, and candles.

Of the Sergeant of a companie.

He ought to be able to read, write, and caſt account, if it may be; to keep accounts of his ſouldiers, how many be pikes, and how many muskets; the beſt armed and moſt courageous of them he is to place in the firſt rank. It is his dutie to cauſe the ſouldiers of his companie to obſerve diſcipline both politick and militarie, and all kindes of commands given by the ſuperiours, whereof he is to give them knowledge.

He is to inſtruct them in the managing of armes, in the keeping of rank and file, and that in ſuch order as the Sergeant major ſhall appoint.

He muſt take care of the armes and munitions, to diſtribute the powder and match to the Corporals, to place his corps-du-guards and ſentinels with his corporals, in ſuch places as his Captain or Sergeant major ſhall have appointed; often viſiting them, to ſee whether they perform their duties, imploying none thereunto but ſuch as are capable, for otherwiſe an alarm might be often given without cauſe; he muſt make frequent rounds; and if he finde a ſentinell a ſleep in the field, he is to commit him into the hands of juſtice.

When the companie marcheth, if a ſouldier ſtep out of his rank, he is to compell him to his place with the ſtaff of his halbert.

Whether he be in the field or in garriſon, he muſt take care there be no want of victuall, and

there be want, to demand it of the commiſſarie or his deputies, then he is to diſtribute it to his Corporals, and they to the ſouldiers.

He muſt every evening fetch the word at the Sergeant majors lodging, and carrie it to his Captain, Lieutenant, Enſigne, and Corporals.

He muſt order his companie both for their marching, embattailing, as alſo for their watch; but for their encamping, that belongeth to the Quartermaſter.

He muſt place his guard at the houre appointed, and having ſhewed his Corporals the places for the corps-du-guards and ſentinells, and there placed them, he is to give the word ſecretly to the Corporals, according as he ſhall have received it from the Sergeant major.

Of the Enſigne.

It is the Enſignes dutie to carrie his colours whereſoever his Captain, or (in his abſence) the Lieutenant ſhall command him, whether it be in aſſault or in battaile, having no regard to the danger, but to the means to attain it.

Entring the guard, lodging, in fight, or making alto, he is to bear his colours on his ſhoulder, advanced; but when he marcheth in champain, he may cauſe them to be born by one of the braveſt ſouldiers, to which end he is alwayes to have two of them near him.

The company marching in their order, the Enſigne is to be in the middle; but in aſſault, ſcalado, or disbanded fights, he muſt be at the head.

In battaile the Sergeant major appointeth him his place of march, and he ought rather to die then to quit or abandon his colours, for by looſing

ſing them, he diſhonoureth both himſelf and his companie.

He muſt get the love of his ſouldiers, that ſo they may follow him with the better courage.

If the Colonell command him to plant his colours in the field, he is to do it; but he ought rather to acquaint his Captain therewith. And in caſe of alarm, without expecting any command, he muſt repair to the place of armes.

The place of armes of a Companie is before the Enſignes lodging, where all the ſouldiers muſt aſſemble in armes; and of a regiment, it is before the Colonels lodging.

Marching in battalia, he is to march courageouſly without bowing himſelf to any, unleſſe it be to his chief commanders, before whom he is to encline the head of the colours, more or leſſe, according to their degree, without making a ſhew of raiſing his hand to his hat, or bowing his knee.

Of the Lieutenant.

All the Lieutenants ought to be as able as the Captains, whom they repreſent, ſeeing that in their abſence they have the ſame charge and authoritie: and oftimes the Captains are young Gentlemen, deſcended from illuſtrious and valorous perſons, which have courage ſufficient, but want ſtrength and skill He muſt keep the Enſigne, drum, and all the officers and appointees near him, to make uſe of them as occaſion ſhall ſerve

He muſt neither take on, caſhier, nor puniſh any man in the preſence of his Captain, for at that time he hath no authoritie, and all that he doeth

s by permiſſion and commiſſion; but in his abſence he is to be obeyed as the Captain.

His companie being ordered for combat, if his Captain be abſent, he is to lead them; but if he be preſent, he muſt keep on the rear, and place his two Sergeants on the flanks, that ſo every man may keep his rank, and fight reſolutely.

At an aſſault he muſt aſſiſt the Enſigne, and lead him to the place of combat, which he muſt have viewed beforehand.

It is his charge to obſerve the actions of the Corporals and Sergeants, to hold them to their duties, and to cauſe them to provide what is neceſſarie for the companie, and to aſſiſt them where he ſhall ſee cauſe.

Of the Commiſſarie.

The office of a Commiſſarie of ſouldiers is to cauſe the muſters to be taken and moneys to be payd, to receive the oath, and to give the quarters for the lodgings.

Of the Captain.

A Captain ought to be expert, diligent, and courageous; he muſt know the duties of all that are under him, but principally his own.

His office is to lead his companie whereſoever his Generall or Colonell ſhall command him.

His functions are, to give the orders to his Lieutenant and Sergeants for the marching of his companie, be it three or five in rank, placing his muskets in the front and rear, and the pikes in the middle. Or in battaillon, placing the muskets on the flanks of the pikes.

He muſt teach them how to fight, be it in ſurpriſe of an embuſcado, in approach of cities, in aſſaults, encounters, skirmiſhes, or battailes. To lead them on prudently, labouring to bring them off with as much glorie, as he ſhall have courageouſly brought them on.

The Captain muſt alwayes be at the head of his companie, certain paces advanced before them, unleſſe it be to joyn in battaile, for his ſole perſon were not able to ſuſtain the ſhock of the enemies pikes, but then he is to place himſelf in the firſt rank of his companie.

He muſt cauſe his ſouldiers to be taught the uſe of their ſwords, pikes and muskets, teaching them how to order themſelves in battalia, and to rally themſelves being disbanded, either by occaſion of an *alto*, a narrow way, or a defeat. Alſo to make their huts, and all other exerciſes of warre.

At every diſlodging he muſt cauſe his company to be put into battalia, and then to cauſe them to march according as the ground will permit, and at their lodging to lead them in a long order of march, either 3 or 5 in rank.

Marching with his companie alone, he cannot puniſh a ſouldier with death, unleſſe he rebell, for then he ought to kill him, but for any other matter he can but diſarm him, take away his accoutrements of liverie, degrade and caſhier him; or commit him to the cenſure of the Colonell of that regiment.

He muſt take care for the payment of his ſouldiers, of their armes, victuall, and munitions, to cauſe the hurt to be healed, and to compoſe quarrels. He muſt make choice of an expert Lieutenant, a courageous Enſigne, two diligent Sergeants,

Sergeants, ſuſpecting Corporals, a faithfull clerk, a carefull harbinger, a bold chirurgeon, and a pious Chaplain.

The Captain appointeth his own Sergeants, harbinger, drum, fyfe, and chirurgeon: but for his Lieutenant, Enſigne, Corporals, and Appointees, he muſt preſent them to his Colonell, and to have his leave to place them in their offices.

The companie entring the guard, the Captain is to march at the head, with a pike in his hand, and compleatly armed. If it be in the field, they are to be ruſſet, but rich ones; if it be in a citie, having a fair plume on his head-piece, which he ſhall cauſe to be carried before him.

He muſt cauſe his ſouldiers to know how to fight ſingle, how in a body.

He muſt know the advantages of places, armes, times and occaſions, and how to make uſe of them.

To underſtand fortifications, the manner of defending and aſſailing of places of ſtrength; how, and in what manner the works are to be made; that ſo when it ſhall come to his turn to direct or guard a work, he ſhew not himſelf a novice or freſh water ſouldier.

Of the drum.

In every companie there muſt be one or two drums, and over them all a drum major.

The dutie of every drum is to beat all manner of beats, as the march, the alarm, the troop, the chamadoes and anſwers thereunto, reveills, and proclamations.

They muſt know how to obſerve what they ſee, to take good notice thereof, and to make true report of it.

The

The drum major must be lodged near the Sergeant major, or in his own lodgings; it being his part to give instructions to the rest, and to observe and take into his custodie the enemies drums which enter the camp.

He may with his staff correct the drums which fail of their duties.

All the drums are to attend him morning and evening to the Sergeant major, to know the orders.

Of the harbinger.

He must have a list of the souldiers of his companie, and make the divisions for the lodgings.

At the muster he giveth a muster roll of the souldiers to the commissarie, controller, or clerk, and keeps account of the payes received and due, also of the armes of the companie belonging to his Captain.

He is to take his quarter from the Quartermaster, then to mark out the Captains lodging, the Lieutenants, Ensignes, Sergeants, his own, the drums and fyfes, and to put the rest into billets or lots, and to cause the Corporalls to draw them by turn, who shall distribute them among the souldiers: this is to be done before the Ensignes lodging. He ought to keep a register of all the lodgings of his quarter.

Of the barber chirurgeon.

In every companie there must be a chirurgeon, to trim the souldiers, to attend them which are sick, to dresse the wounds of such as are hurt (being as an assistant to the chirurgeon of the regiment) having proper remedies to stench the bloud,

bloud, to hinder inflammations, and to asswage the pain.

Of the Provost.

It is the Provosts charge to pursue fugitives, to apprehend delinquents, and to imprison them.

He hath under him a Lieutenant, a clerk, six Marshals, and an executioner. His Lieutenant must be skilled in the lawes; if he be not, he is to procure some graduate in the lawes to assist him.

He sets the prises on all the victuall of his quarter, and no man can sell any unlesse it be taxed by him. He appointeth the butchers shambles, and is to take care that the quarters be kept clean. He maketh out processes, heareth and examineth witnesses, searcheth out the truth, &c. And having fitted the cause for triall, the Colonell, Sergeant major, and Captains judge of it, and passe sentence in the name of the Generall.

Before a souldier be delivered to the executioner to be punished for any infamous delict, he must be publikely disarmed and degraded by the Sergeant major.

In marching, it is his charge to conduct the baggage, and to see it kept in good order.

Of the Quartermaster of a regiment.

The office of the Quartermaster is to quarter the regiment, and to distribute the quarters to the harbingers of each companie.

He must ordinarily be near the Colonell, and must every evening go to the Quartermaster Generall to receive the orders for the divisions and the rendez-vous of the troops, and to give knowledge thereof to his Colonell.

When

When the Marſhall of the field removeth, the Quartermaſter Generall, and all the Quartermaſters of the regiments, with all the harbingers of companies are to accompanie him.

The diſtributions of lodgings being made by the Marſhall of the field, his aſſiſtants, and Quartermaſters Generall, and delivered to the Quartermaſters of regiments, they are preſently to adverti ſe their Colonels of the place, and to conduct them thereunto, either by themſelves or ſome others.

During the time that the Quartermaſter is about viſiting the diſtributions of the lodgings, all the troops are to keep watch round about the place, and to ſend out to diſcover.

Firſt he appointeth the Colonels lodging and the Sergeant majors, then his own, in the middle of the regiment if it may be, then he makes as many quarters as there be enſignes, and the harbingers of every companie chooſe the beſt lodgings for the Captains, Lieutenants, and Enſignes.

The Quartermaſters of regiments muſt cauſe the harbingers to draw the billets for their quarters, every one in his order.

They muſt be informed of the lodgings of the whole Armie, to know to whom to give or from whom to receive ſupplies in caſe of neceſſitie.

If the quarter be in the open field, the Quartermaſter Generall ſhall appoint to each Quartermaſter the place and ground which he ſhall take, and the Quartermaſter ſhall diſpart the ground to the harbingers.

Of the Sergeant major.

His office gives him acceſſe to the Generall of the Armie at all houres, who ſpeaking with him, knows

knows from him when, where, and how his regiment ſhall march, whether alone or with others; whether in one battaillon or many, and in what form.

It is his office to give order how the companies ſhall march, ſo that his place gives him authoritie and command over all the Captains of his regiment.

He muſt be exceeding well experienced and exerciſed in his office, principally in embattailing his men; and to rally them being routed, and that in ſuch form as he ſhall be commanded.

He muſt know of the Generall whether his regiment ſhall march in the vanguard, battaile, or rear.

He is to know the countrey, whether it be large or ſtrait, and thereby to judge how he is to march, and what order to obſerve, that he may not be diſturbed by the horſe, artillerie, nor baggage: being ready to march away, he ſhall cauſe the drum major to beat, and he the reſt.

He muſt advertiſe the Captains, cauſe the Enſignes to march out of their quarters, form his battaillon, and give to every Captain the place which he ſhall hold for that day.

Having brought his troops into the field, he muſt ſee them march away, and obſerve whether they march in good order. The Colonell is to lead at the head of the regiment.

Then the Sergeant major is to go to the Generall, and to keep near him as much as may be during the march, to ſee whether there will be any new order for him to receive.

If there be any difficult paſſage, the Sergeant major ought to be there preſent, to prevent the diſosder

diſorder which might happen in his regiment, and to put them in order again if they were diſordered. Before the regiment enter their quarters, the Sergeant major ought to go and take a view of them, or cauſe them to be viewed; then at his return to the regiment, to give licence to the Enſignes to lodge, except thoſe whoſe turn it is to have the guard, which muſt enter the corps-du-guard, and place their ſentinels, until it come to the turn of others.

Now the regiment is to be lodged either in the field or under ſhelter. If it lodge in the field, either the regiment is alone, or accompanied with others. If it be alone, the Sergeant major muſt cauſe it to be barricadoed, or retrenched, or encloſed by waggons or other defences of the field.

After that he is to place his corps-du-guards round about the quarters; and the ſentinels at ſo near a diſtance that they may hear each other ſpeak, being about eighty or an hundred paces off from the corps-du guard: they are to be double, that is, of two men, namely, a musket and a pike; and 500 paces from them, other ſingle ſentinels are to be placed, which are called perdues. In caſe of alarm, the ſentinell-perdue ſhall retreat to the double ſentinell; and in caſe of neceſſitie altogether (having given fire) are to retreat to the corps-du-guard.

The Sergeant major muſt often, and at divers houres of the night, viſit the corps-du-guards.

If there be more regiments, they ſhall fortifie themſelves with waggons, or entrench themſelves, and each regiment ſhall take their quarter, and ſhall make their guard as aboveſaid.

If an alarm be given in the field, the Sergeant major is to betake himſelf to the alarm-place of the regiment, and there to form his battaillon, and ſend men to double the guards on that part where the alarm was given, and to give notice to his Colonell and the Generall of foot (if he be preſent) of what paſſeth. The Enſignes muſt not retreat, unleſſe the Generall, or their Colonell, or Sergeant major give them leave.

No Enſigne muſt remove from his place, nor enter into the ſame, without leave of the Sergeant major or his aſſiſtant. No order ought at any time to be altered but by him, for he giveth not any orders but by appointment of the Generall or Colonell.

All ſorts of munitions which are to be diſtributed amongſt the regiment, ought to be delivered to the Sergeant major, who is to divide them amongſt the companies. He hath the charge to provide all things neceſſarie for his regiment, to ſend away the ſick men to hoſpitals, commanding the Provoſt to provide waggons.

The Captains are to receive the adviſes of the Sergeant majors aſſiſtant, as from himſelf; the Quartermaſters do uſually perform this office.

The Sergeant major ought to take the word from the Generall, or the Marſhall of the field, or from his Colonell; In abſence of theſe he giveth it himſelf.

In the day of battaile he ought not to be on foot amongſt the Captains, but muſt be on horſeback, now on the front, then on the rear, to put in order thoſe which might happen to be diſordered.

If the regiment lodge under ſhelter, the Sergeant

geant major is to view the place within and without, the moats, the gates, and the walls, appointing the places for the corps-du-guard and ſentinels, and the way of the rounders, that it may be free.

He muſt chooſe a place to make the alarm-place for the regiment, and there the companies are to have their rendez-vous, in caſe of alarm.

After that, he muſt lead his regiment in order into the alarm-place, placing his guards at the gates, and on the walls; that done, he ſhall give leave to the Captains to go to their lodgings in their ſeverall quarters in the town, giving them order (under his hand) concerning the place whither they ſhall reſort in caſe of alarm; which order he may change ſo often as he ſhall think good; for the companies ought never to be aſſured of the place of their ſtation, unleſſe it be for the rendez-vous within the town, but not for the quarter on the walls: for the Sergeant major muſt (at every turn) cauſe the companies to caſt lots, to know what part of the walls will fall to their turns.

He ought to take care to cauſe the bridges, corps-du-guards and watch-houſes to be repaired, if need be, and to have wood, torches, lanterns, and creſſet-lights for the guards.

He is to cauſe the companies to enter the guards about ten or eleven a clock in the morning. He is to open and ſhut the town gates at the riſing and ſetting of the ſunne; and to place the watches for the walles preſently upon ſhutting the gates, and to releeve them at the opening of them.

The

The Serg ants which have the guard muſt be preſent at the opening and ſhutting of the gates, and carrie the keyes of the gates to the Sergeant major, and he to the Governour; but it is better that the Sergeant major be there aſſiſting, and be preſent at the placing of the guards, ſo often as may be.

He muſt have a liſt of all the ſouldiers of every companie as they paſſed at the muſter, ſigned by the Commiſſarie or Treaſurer which took the muſter; and in caſe he finde not ſo many ſouldiers at his guard, the officers of the companies are to give him an account thereof, becauſe it belongeth to him to give account to the Generall concerning his regiment.

Of the Sergeant major Generall.

The Sergeant major Generall receiveth from the Generall a plat of the form which he will give to his Armie, the diſpoſition and placing of the members of it, Cavallrie, Infanterie, Artillerie; the order which they ſhould obſerve in fight, with commiſſion ſigned by the Generall to diſpoſe it in that manner.

To this commiſſion the whole Armie muſt yeeld obedience, and the Sergeant major Generall with the Marſhals of the field ſhall diſpoſe thereof, according to the form and place which the Generall ſhall have prefcribed.

Of the Quartermaſter Generall.

He hath the ſame charge of the whole Armie, which the Quartermaſter of a regiment hath of his regiment.

Of the Colonell.

The Colonell ought to be a man of authority

and reſpect, to have abſolute command over his Captains, from which he muſt procure love and reverence, which he is to gain by his valour and modeſtie.

The regiments being together, muſt march according as the King hath given them preheminence, and in that place which the Generall ſhall appoint them, in the van, battaile, or rear.

His principall charge is to lead his regiment to the combat, on the head thereof.

He ought to viſit his troops, cauſe his guards to be well ordered, changed, and releeved, and to ſee that each officer do his duty, and that the works be well ordered.

He ought to ſee how his Companies be furniſhed, what armes they have, and what exerciſes they perform, and to command the officers what they ought to do.

In the armie the Colonell cannot give leave to a ſouldier to depart from his regiment, but to change his Companie; the firſt appertaining onely to the Generall.

The Colonell ought to be called to councell by the Generall, when matters are to be agitated which belong to his charge; where he ſhall heare the opinion of others, and freely ſpeak his own. And if it be about a matter of importance, and that he knoweth his opinion to be good, though the contrarie opinions (being ſtronger in number) do carrie it, he ought to commit his opinion to writing, to purge himſelf before his Soveraigne, in caſe the execution of the councell prove ill. Mean time he muſt give way to the pluralitie of voices, and entirely obey his Generall, and appear in a place

places where he ſhall be commanded, making it appear that the contrarie opinion which he held at the councell was not for want either of courage, or of good affection.

The Colonell muſt render all manner of obedience to the Generall of the armie, and to the Generall of Infanterie, (for they have power to command him) and to the Marſhall of the field, as having the charge from the Generall to give the orders, the quarter, the alarm-place, the field for the battaile; to cauſe the forces to march, lodge, diſlodge, enter into guard, convoy, &c.

The aſſiſtants to the Marſhall of the field, or the Sergeant major Generall cannot command him any thing as of themſelves, but by order ſigned by the Generall, or the Marſhall of the field for the armie, with the plats and deſignes of the ground of the ſtations and places for combat, giving command by vertue thereof.

Of the Marſhall of the field.

He ought to be valorous, judicious, and expert, to remedy many caſuall accidents.

He ought to come firſt to the rendez-vous of the armie, to receive his troops there, to diſpoſe of the diſparting of the lodgings, as well for the cavallrie and Infanterie, as for the Artillerie, caſtuall, and pioners.

He is to inform the Generall of the whole ſtate of the field, and then the Generall will give him the order and diſpoſition of his armie, whereof he is to give notice to all the commanders of horſe and foot, ſending them the direction.

He is to ſet down the order of the guards of the field, and of the convoyes, and to cauſe the

laws and ordinances to be publiſhed and ob-
ſerved.

He is to view the paſſages by which the Ar-
mie is to march, to know what order they muſt
obſerve. To do this, he is to take three or foure
troops of light horſemen, of ſuch as are to have
the guard the night following, which are warn-
ed over night to be in readineſſe againſt the
morning following, and to be at the rendez-vous
which ſhall be appointed them, rangeing them-
ſelves under the cornet of the ſaid Marſhall of
the field with the Quartermaſters, Commiſſa-
ries of the victuall and artillerie, engineers, har-
bingers, and pioners.

In marching he is to ſend a troop before, and
one on either hand, who ſhall ſend out before
them five or ſix ſcouts to diſcover the champain
as perdues.

If an alarm happen, he ought to be well in-
formed of the cauſe, and not to miſtake it; ſo
ought he not to ſtay ſo long that he be put to
flight, but ſhall ſend word to the Generall for
ſupplies, that ſo the Armie may have leiſure to
embattaile.

If he arrive ſafely at the rendez-vous of the
Armie, he is to ſend his troops half a mile or
more beyond, to diſcover the countrey, and to
get intelligence concerning the enemie; mean
while he is to obſerve the ground and place for
the camp, and having traced it out in the gene-
rall, the Quartermaſter Generall ſhall make the
diviſions, and deliver them to the Quarterma-
ſters of regiments.

Finally the Marſhals of the field ought to or-
der the quartering of the whole Armie; to b
th

he firſt on horſeback, and to alight laſt, being al-
wayes preſent at all the motions of the Armie.

He muſt take the word from the Lieutenant
Generall of the Armie, to give it to all the offi-
ers of the field, which muſt come to him for it.

The Generall and Lieutenant Generall of
orſe, the Generall of foot, and the Generall of
e Artillerie take the word from the Generall
the Armie, if they will not take it from the
arſhall of the field.

Of the Commiſſarie Generall of the victuall.

The Commiſſarie Generall of the victuall
ght to know the number of men which are to
fed, the place whither the munitions are to
brought, when they muſt begin to be diſtri-
ted, and how long to continue, that ſo he may
ake proviſion of corn, and cauſe the bread to
baked.

The meaſure of wheat at Paris is this, the muyd hath twelve ſeptiers, the ſeptier twelve boyſſeaux. The ſeptier of wheat weigheth about 240 pound, and of meſlin 220 pound. *what theſe make of our Engliſh meaſures, ſee it in Cotgrave, and others.*

The munition meſlin is two third parts of heat, and one third part of rye: the boyſſeaux this meſlin weigheth about eighteen pound. ere is drawn out of it three pound of bran, and een pound of meal, which is kneaded with pound of water, whereof the paſte weigheth pound, of 16 ounces in the pound, and makes out 20 pound of baked bread.

To every ſouldier is uſually given two loaves a y of ten ounces weight a piece, and one pinte wine Paris meaſure, ſuch as there is 290 in a

muyd, and three muyds make a tun.

The Cavallrie is not fed with amunition-bread, becauſe they are uſually quartered under ſhelter in towns and villages. The waggons to carrie munition-bread are made after the manner of tumbrels or cheſts, each of them is drawn by foure horſes, and carrieth 1500 loaves, and a mule with wicker paniers carrieth 300.

There muſt be three times as much carriage as is needfull to carrie victuall for one day; as to feed five thouſand mouths, there muſt be ten thouſand loaves, and five and thirty mules or horſes to carrie them; being tripled they will be one hundred & five mules, which muſt be had namely, one third part to go to fetch the bread one third part which is coming with it, and one third part which is unlading. There uſeth ordinarily to be added to the munitions one quarte of bread and wine more then needeth.

Of the Maſter or Generall of the Artillerie.

He is abſolute over all the Artillerie and the officers thereof, and is ſubject to none but the King, and in the armie to the Lieutenant Generall.

He muſt keep account or inventorie of the pieces, powder, bullets, and equipage of the pieces, and of all the officers of the Artillerie in the whole kingdome, to inform his Majeſtie when he ſhall have a deſire to execute ſome deſigne, as to beſiege ſome place, to fight a battaile in the field, or at ſea, or to ſtrengthen his holds.

He ought to know what proviſions and pre-

paration

parations he is to make, how and where the ordinance are to be planted, at what distance they should be levelled, of what qualitie the wall is which is to be battered, and what the power is of his Artillerie.

If a souldier of the armie hath committed any offence, and can convey himself among the Artillerie, he is there as in a priviledged place, and cannot there be apprehended, unlesse it be by the Provost of the Artillerie, who shall deliver him into the hands of his Captain, after that he be informed of his delict by a legall triall.

In the situation of the ordinance he is to regard that the place be commodious, that it be easie to be defended by the souldiers, that they may skirmish with facilitie, that in case of necessitie the ordinance may speedily retreat, that they may discover, command, and batter point blank, and that their distance be not excessive.

The souldiers appointed to guard the Artillerie, ought not to come nearer it then fifty paces.

The Generall of the Artillerie ought every yeare to present a list of the officers of the Artillerie to the King, filling the vacant places with the names of such persons as he shall think most fitting; then the King either confirmeth the same, or altereth it at his pleasure, then signeth it, and causeth it also to be signed by a secretarie of state. This list is delivered to the treasurer Generall of the Artillerie, who prosecutes the assignations, and payeth the officers named in that list, taking their acquittances.

His officers are, a Lieutenant Generall, a

Guard Generall, two Controllers Generall, a Treasurer Generall (who payeth according to the Generall of the Artillerie his order) a Quartermaster, a Provost; and each of them hath two Commissaries in all the storehouses and armories of France.

He causeth the ordinance to be founded, tryed, and mounted, he buyeth the metall, wood, bullets, iron work, pikes, muskets, and all sorts of armes, shovels, pickaxes, hatchets, hammers, ladders, &c. horses, waggons, cordage, &c. causeth the powders and fireworks to be compounded, and that in all the magazines of France.

Of the Generall of horse.

He commandeth all the light horse and carabines, and in his absence the Colonell doth it.

He lodgeth and leads them, and sends them to the conflict, and gives them the order of combat.

He is lodged with his Cavallrie at the head of the Armie, sends out every day to discover the enemie, renders an account dayly of the same and their actions to the Lieutenant Generall of the Armie.

The chiefs of the forces are the King, the Kings sonnes, the Princes of the bloud, the Generall, and the Colonells, &c.

For all the troops there is a Quartermaster, and one or two harbingers Generall.

And over every troop, a Captain, a Lieutenant, a Cornet, a Quartermaster, an harbinger, and a trumpet.

The dutie of the troops is, alwayes to scoure and discover the high-wayes and advenues by which the enemie might come, and to be ever hovering

hovering about the enemies Armie; for this cauſe they are to make great and long dayes-journeys, but are excuſed of watch in the night, except in their own quarters, and for them onely.

At the ſiege of towns they are ſent before to make waſte, to ſeize on the paſſages, to inveſt the towns, to skirmiſh, and to take priſoners, thereby to be informed of the eſtate of the town.

It is no diſgrace for the light horſe to retreat on the gallop, for their dutie is to fight as well retreating as advancing, ten againſt fifty, thirty againſt an hundred; therefore they muſt be well practiſed to make a good retreat, and to ſingle themſelves out of a greater troop then their own, and to charge them again in opportune time, according as their courage and judgement ſhall give them reſolution, and experience ſhall direct them.

Of cuiraſsiers.

The Conſtable or Generall of the armie commandeth the cuiraſſiers, and in his abſence the Lieutenant Generall of the armie.

They are divided into troops of an hundred men, at leaſt thoſe which belong to the King, the Princes, the Conſtables and Marſhals of France; the reſt are not ſo ſtrong.

The officers of every troop are a Captaine, a Lieutenant, (in the Princes troops there be Sub-lieutenants) a Cornet (which is ſquare for the cuiraſſiers) or a Guidon (which is long and ſplit for the harquebuſiers) a Quartermaſter, a harbinger, and a trumpet.

They may fitly march, lodge, or fight in the van,

van, battaile, or rear, according to the order preſcribed by the Conſtable or Generall of the armie.

The Captains chooſe and diſpoſe of places amongſt all their members at their pleaſure, but they cannot caſhier any unleſſe he hath been wanting in the Kings ſervice.

Their dutie is to keep cloſe united, to march ſoft and fair, and never to turn their backs, and for this reaſon they muſt be heavie armed.

Of the Generall of Infanterie.

The charge of the Generall of the Infanterie extendeth it ſelf over all the foot, much more abſolutely then the Colonels of his regiment.

In all the regiments he maketh the Sergeant Majors, Provoſts, Quartermaſters, Chirurgeons, and Almoners.

All adminiſtrations of juſtice over all the foot, paſſe in his name.

He hath the nomination and preſenting of the Captains to the King, he is alſo to give him information of the ſufficiencie or inſufficiencie of the Colonels, ſeeing that the King beſtoweth their offices upon them, that ſo he may know all thoſe of his kingdome which are capable, as having learned their profeſſion amongſt the foot.

Of the Conſtable or Generall of the Armie.

He hath the command of the whole armie.

He ought to know all the duties and charges of the officers thereof, and ſhould be of great experience,

experience, that ſo amongſt many differing opinions, which are uſually in councels, he may be able to chooſe the beſt.

He ought to be of great authoritie in his commands, of great courage in combats, conſtant and reſolute in croſſe accidents, ſucceſſefull in his enterpriſes; and that he may be ſuch, he ought to invoke God to be propitious to him, who will give him judgement to diſpoſe his armie after the beſt manner, and (by his good diſcipline, diſpoſition, and order) to render it not onely able to overcome (which is all that a Generall can do) but will alſo make it victorious, if it depend on the power and favour of the Lord of hoſts.

Good ſucceſſes or bad ſhould not make him change countenance, but to receive both modeſtly, without diſcovering the paſſions of his ſoul by his countenance.

Impatience, ſluggiſhneſſe, choler, crueltie, or envie towards thoſe which acquire glorie under him, ſhould not be harboured in his ſoul.

He muſt be reſolute, and well weigh the occaſion of giving battaile, rather then hazard all his troops in fight; labouring to overcome his enemie as much by induſtrie as by force: as, in ſurpriſing him being diſordered, his troops being ſcattered, wearie, wet, or ſurpriſed with hunger, thirſt, cold, or ſome other accident.

He is not to ſuffer skirmiſhes, unleſſe he ſee much advantage; for by overcoming in theſe ſmall occaſions, the ſouldier becomes more courageous, aſſures himſelf of the good fortune and

good

good leading of his commanders, and easily perswades himself of the victorie.

He ought to consult with many, but never to tell his resolution to any man, or at least to very few: by this means he shall render himself so practised as he shall be able wisely to lay hold on fit opportunities and the instant of occasions, to prevail thereby.

He ought to acquire the love of all men, principally of the commanders, and not to wearie or tire his army too much, for fear of diseases, yet to cause his battaillons to be throughly exercised in all exercises of warre. He ought to be rigorous towards evil men, and to cause justice to be readily executed.

Of fireworks.

Chap. XV.

IN the tenth chapter hath been shewed what materials were to be provided for fireworks; here shall be taught how they are to be compounded.

To make garlands or pitcht ropes for cressets.

Take of black pitch twelve pound, of tallow six pound, linseed oyle six pound, hard resin six pound, turpentine six pound, melt these altogether, and lay match therein, untill it suck up all the composition and be well incorporated; then make your garlands therewith.

To make torches againſt rain and winde.

Take cords of fine hemp, very open twiſted, about the thickneſſe of ones little finger, beat them with a mallet till they be very ſoft; diſſolve ſaltpeter, and boil the ſaid cords therein, then let them be dried. Make a paſte of ſulphure and gunpowder beaten together, ſoaked in linſeed oyle untill it be liquid; ſteep your cords in this liquour, and let them drie again. Then take three parts of wax, two of reſin, one of ſulphure, one of black pitch, half of turpentine, a quarter of campher; melt and mix all that well together, then cover your cords after the manner of a wax candle, and joyn foure of them together, and in the middle of them a ſtaff of ſallow about the thickneſſe of a finger, prepared as the cords or matches above ſaid.

To diſſolve ſaltpeter.

Put to one pound of ſaltpeter two ounces of water, then ſet it a melting over the fire in a kettle. It will alſo diſſolve alone, but not ſo eaſily.

To bring ſaltpeter to flower.

Diſſolve the ſaltpeter over the fire, then ſtirre it with a ſtick untill it come to be like meal.

To make roch petre.

You muſt melt it alone in a kettle, then let it grow cold.

To make flowers of ſulphure.

Melt ſulphure in a limbeck, and the flowers will gather together about the helm.

To better the flowers of ſulphure, melt them and lay them into ſtrong vineger.

To make an excellent ſulphure, take one part of flowers of ſulphure, melt it: put into it half a part of quickſilver, and ſtirre it ſoftly over a ſmall fire, untill all be mixed, then ſlake it with ſtrong vineger.

To make excellent coal.

Take young twigs of haſle or ſallow, or the ſtock of a vine, put them in ſmall pieces into an earthen pot cloſe covered, then ſet the pot on the fire untill the twigs be burnt; their coal is very good.

To make good powder for muskets and piſtols.

Take ſeven parts of ſaltpeter, one part of ſulphure, and one part and a quarter of charcoal; or rather eight parts of ſaltpeter, one part of ſulphure, and one part and one fift part of coal: beat it altogether very throughly, and ſprinkle it over with good vineger, then grain it.

To make roch fire.

Take one part of common ſulphure, melt it in an earthen pot, being melted put into it half a part of courſe grained powder well dried, ſaltpeter one third part, beaten charcoal half a part; put theſe things together by little and little, being well mingled, poure them on the flore, and you have the roch fire.

To make burning bruſh-faggots to caſt into the moat, to ſhew light in the night.

Take roch fire and melt it, then anoint the faggots with it, or joyners chips, or elſe anoint them with turpentine.

To make fireballs to ſet places on fire.

Take roch fire one part, ſaltpeter one part, mpher one eighth part, fine powder one eighth rt, beat each of them ſeverally, then mix them gether with your hand, and put them into an llow ball, having holes in divers places, with rds amongſt it.

Otherwiſe.

Take one part of campher, one part of ſalt-ter, half a part of ſulphure, one third part of al, all beaten to very fine powder, then mixed ith petroll untill the matter be ſet in clods, en ſet it a drying; the older it be the better it : then you muſt load the hollow balls, having les of ſufficient bigneſſe, and give fire to them a match or week.

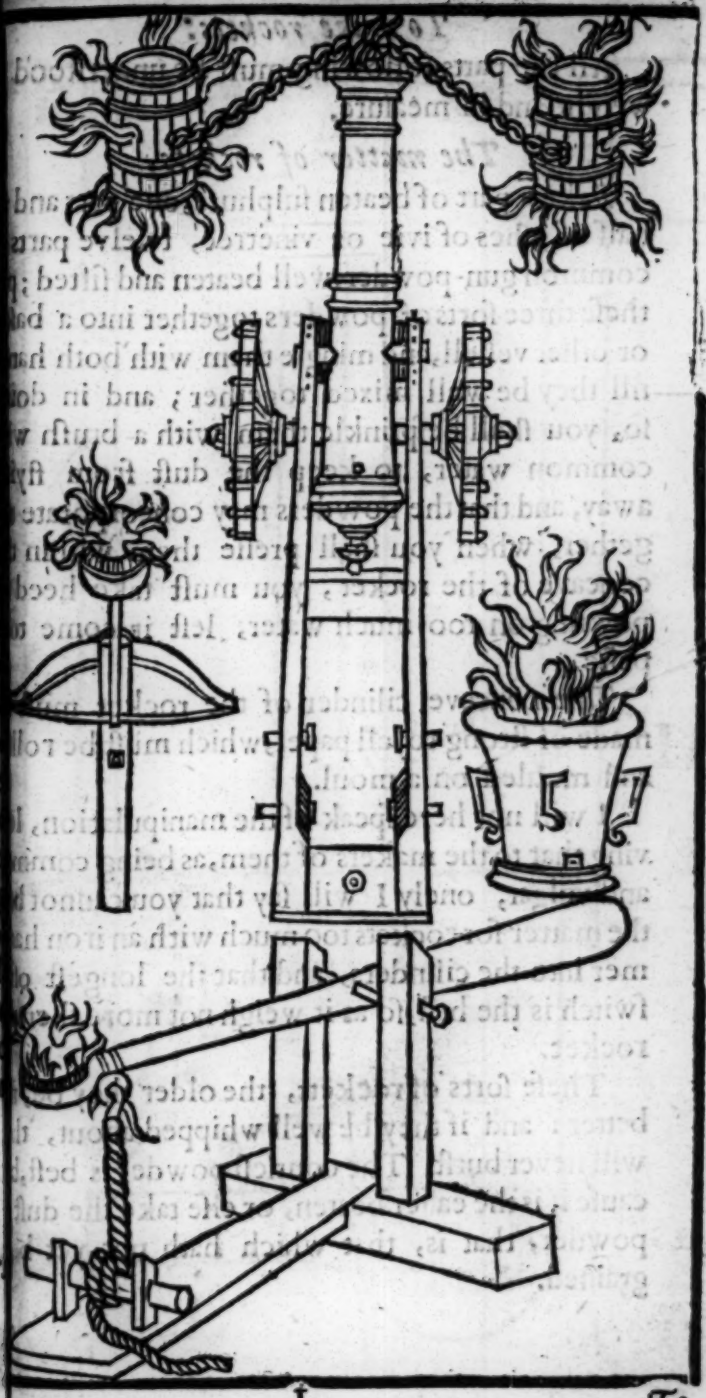
To make the match or week

Take half a quarter of powder, a quarter of ltpeter, two ounces of *aqua vitæ*, half a ſeptier vineger, and one pinte of urin, let all this be elted together; being diſſolved, put into it urſe-ſpun-cotten, untill it have ſucked it all up ing warm, and you ſhall have a violent week. ake it out while it is moiſt, and by pieces of wo, three, or foure foot long, rowl it with your nd on a table ſtrewed with well beaten pow-r, and being ſo powdred, hang them in the adow to drie, then lock them up in ſome drie lace.

To make a fire trunk.

Take a piece of light wood of three foot a
an half, or foure foot long, bore it through fr
the one end to the other with a hole of an in
in diameter, make the wood very ſmooth wit
in and without, which muſt be an inch thi
and of a like bigneſſe every where; place at t
one end an half pike, which may enter half a fo
in at the hole, and nail it ſure; whip the tru
with ſtrong packthred, then anoint and knu
it with reſin and wax melted together, to ke
it from water. The mixture of the powders a
twelve parts of ſaltpeter, ſix of ſulphure, ſix of c
non powder, ſix of fine powder, two of gla
meanly beaten, two of quickſilver, and of ſal a
moniack; beat all theſe ſeverally, then mix the
together, and make a paſte of them with oyle
peter, more hard then ſoft, then take hards a
make little balls with the mixture above ſaid, o
the bigneſſe of the caliver of the trunk, and l
them drie, and binde them with ſmall wyer. T
charge the trunk, put a charge of beaten powd
in the bottome of the trunk without rammi
of it, put a ball upon that, and then a little o
your mixture, continue thus untill it be filled
augmenting the charges of powder, ſo that th
laſt be of two charges. You are to give fire t
this trunk by the mouth of it with a match o
week.

Diver



L To

Divers instruments to cast fireworks.

To make rockets:

All the parts following muſt be underſtood
weight and in meaſure.

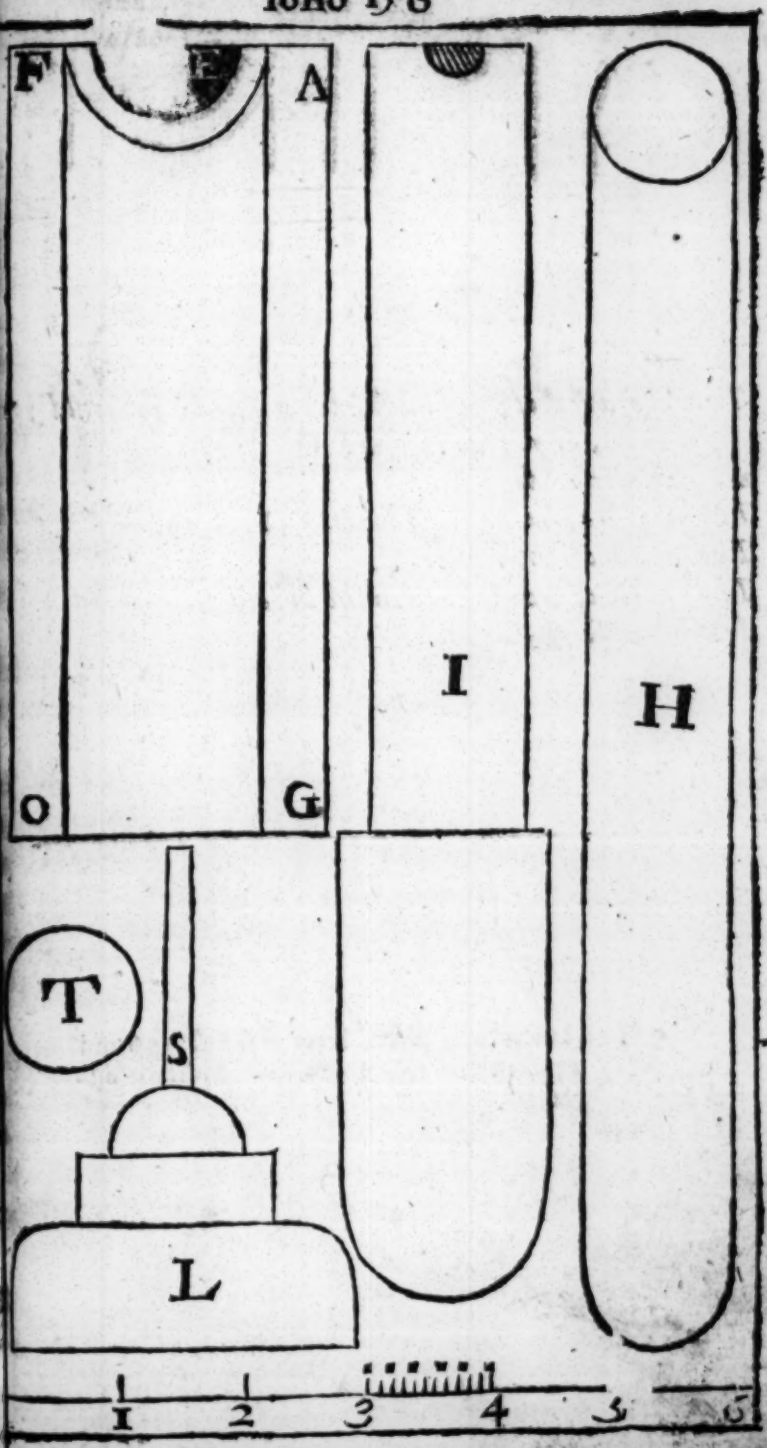
The matter of rockets.

Take a part of beaten ſulphure, one part and
half of aſhes of ivie or vinetree, twelve parts
common gun-powder, well beaten and ſifted; p
theſe three ſorts of powders together into a baſ
or other veſſell, and mingle them with both han
till they be well mixed together; and in doi
ſo, you ſhall beſprinkle them with a bruſh wi
common water, to keep the duſt from flyi
away, and that the powders may concorporate t
gether, when you ſhall preſſe them within t
concave of the rocket, you muſt take heed
powring on too much water, leſt it come to
paſte.

The concave cilinder of the rocket muſt
made of ſtrong royall paper, which muſt be roll
and mouled on a moul.

I will not here ſpeak of the manipulation, le
ving that to the makers of them, as being comm
and vulgar, onely I will ſay that you cannot b
the matter for rockets too much with an iron ha
mer into the cilinders, and that the longeſt o
ſwitch is the beſt, ſo as it weigh not more then
rocket.

Theſe ſorts of rockets, the older they be, t
better: and if they be well whipped about, th
will never burſt. The courſeſt powder is beſt, b
cauſe it is the eaſier beaten, or elſe take the duſt
powder, that is, that which hath not yet be
grained.


F
E
A
I
H
O
G
T
S
L
1
2
3
4
5
6

To make a rocket, you muſt have a mould to mould your paper on, as you ſee in figure. H.
A rammer or drift. I.
The mould to charge the rocket. A, F, G, O.
The breech of the rocket. L.
The needle of iron faſtned in the breech. S.
The bigneſſe of the ſtarres. T.

¶ This leaf is to be placed betwixt *folio*'s 156 and 157, in the Art of Warre or Militarie diſcourſes.

To make corvet-rockets, which draw fire after them untill they burſt.

Take a part of beaten ſulphure, a part of aſhes of vie or vine, half a part of oſier coals beaten, and welve parts of gun-powder beaten and ſifted, and ix it as hath been ſaid before.

To make the compoſition of ſerpents which are added to rockets.

Take aſhes of vine one part, and of gun-powder eaten and ſifted twelve parts, and load the con- aves of the quills therewith; and if you would ve the ſerpents to crack, you muſt make them paper as the rockets, and they muſt have a pe- rd of grained powder at one end.

To make the compoſition to charge ſtarres.

Take one part of beaten ſulphure, one part of owder, two parts of ſaltpeter, and half a part of al of oſiers; all being well beaten.

Of this compoſition take the bigneſſe of a uſket buller, cover it with hards, and tie it about ith thred.

You muſt pierce through theſe ſtarres with an on bodkin of ſufficient bigneſſe to thred them, a ſtring of beads or a ſtring of match to give e to them.

Of the militia of the Grecians.

Chap. XVI.

Their foot were divided into two kinds, pikes, and such as used flying weapons.

The pikes bore a target, or a corslet and greves, a pike from 20 to 24 foot long, and a sword.

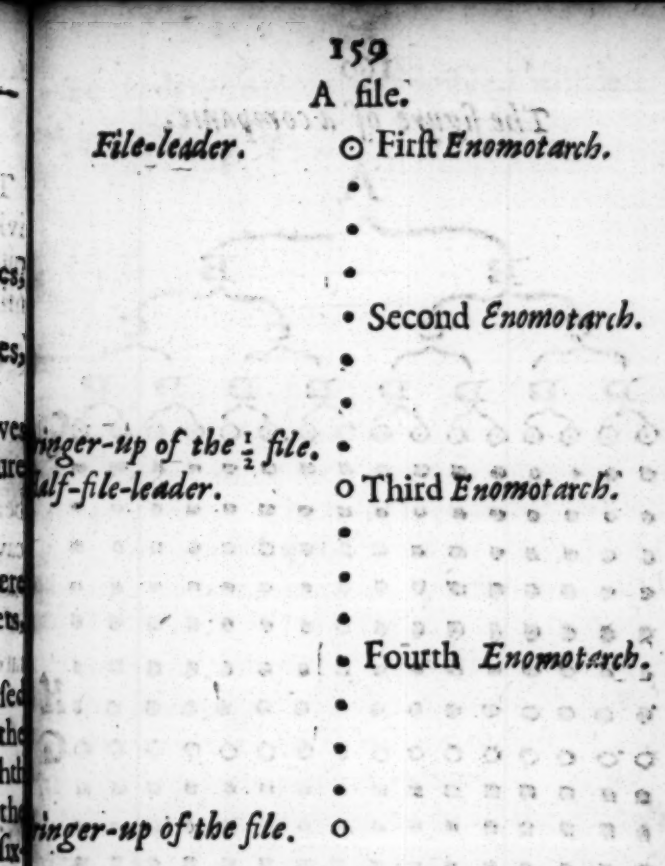
The strongest of them covered themselves with a Macedonian target of brasse, being foure foot in diameter.

All the pikes were called heavie armed.

They which used flying weapons (which were called the light armed) carried wicker targets, bows, darts, and slings.

The heavie armed souldiers were thus disposed of, 16 men made a file: the first man being the file-leader, commanded the whole file; the eighth man was the bringer-up of the front-half-file; the ninth man was the half-file-leader, and the sixteenth man was the bringer-up of the file.

The whole file was divided into foure equall parts, the first souldier of every fourth part was called *Enomotarcha*, and had command over the other three.

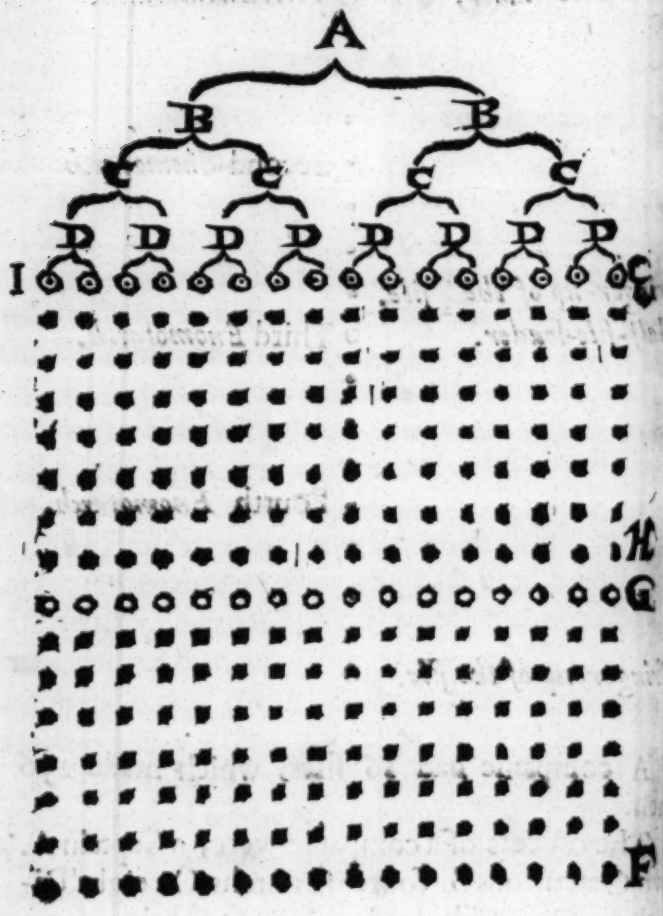


A companie had 16 files, which made 256 men.

The officers of a companie were, a Captain A. two Centurions B. foure Tetrarchs C. eight Dichites D. 16 file-leaders I, E. 16 bringers-up of the front-half-files H. 16 half-file-leaders G. and 16 bringers-up of the files F.

Besides these they had an Ensigne, a Sergeant, a Trumpet, a Rear-commander, and a Cryer.

The figure of a companie.



The dutie of the officers was to instruct the ſouldiers in all the militarie motions; theſe motions were, to ſtand right in ranks and files, to face to the right, left, and rear; to double files and ranks; to perform their countermarches and wheelings.

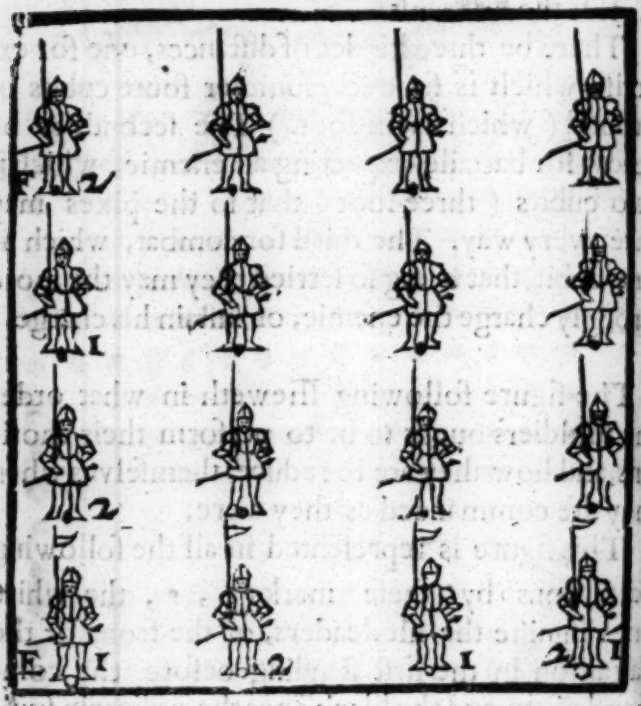
To render this more intelligible, I will deſcribe each of them apart. Firſt, the companie is drawn up into a body (as hath been ſhewed before) then the ranks and files are made ſtraight and even, and they take their diſtances; E. F. is the firſt file, E. I. is the firſt rank.

There be three kindes of diſtances, one for exerciſe, which is for every ſouldier foure cubits of ground (which is ſix foot.) The ſecond, to be ready for battaile expecting an enemie, which is two cubits (three foot) that ſo the pikes may face every way. The third for combat, which is one cubit, that being ſo ſerried they may the more ſtrongly charge the enemie, or ſuſtain his charge.

The figure following ſheweth in what order the ſouldiers ought to be to perform their motions, and how they are to reduce themſelves when they are commanded as they were.

This figure is repreſented in all the following battaillons by theſe marks o, •, the white ones ſignifie the file-leaders, or the front of the battaillon in the firſt ſtanding before the command given, and the black ones the ordinarie ſouldiers. The ſmall pricks ſhew the way by which every ſouldier moved, the figures of men ſhew in what form the battaillon ſtandeth after the motion according to the command given them, and the cypher figures placed in the ranks and files ſhew which are to ſtand and which to move, or which are leaders, and which are followers.

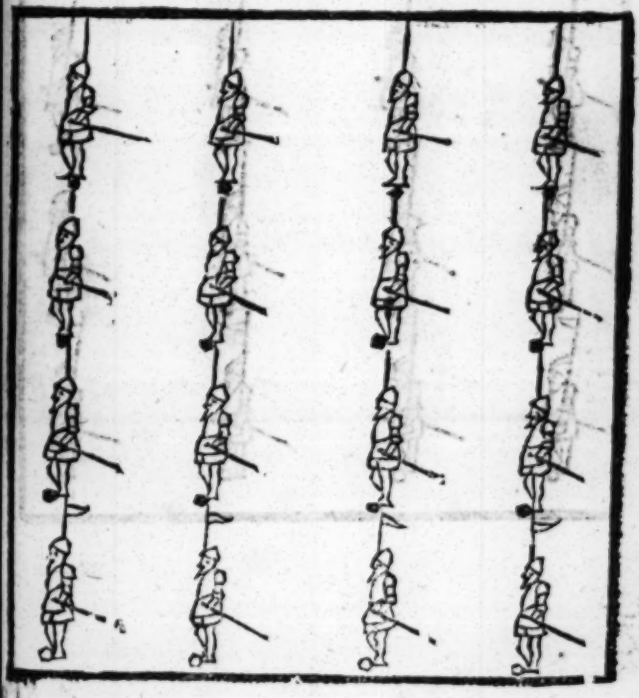
The ſtanding of ſouldiers which have made even their ranks and files, attending the word of command to perform the exerciſe.



To

To cauſe all the battaillon to face to the right, every ſouldier muſt turn his face to the place where his right hand was.

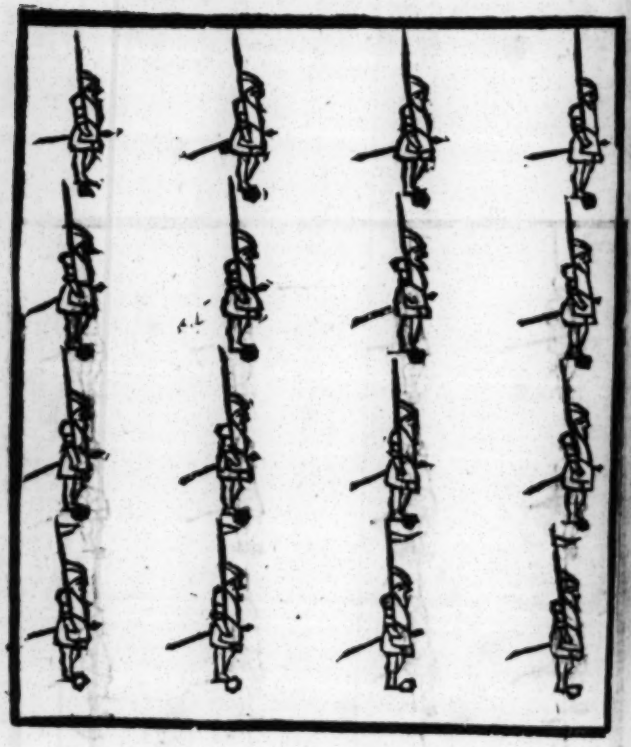
A battaillon faced to the right hand.



To

To cauſe all the battaillon to face to the left, every ſouldier muſt turn his face to the place where his left hand was.

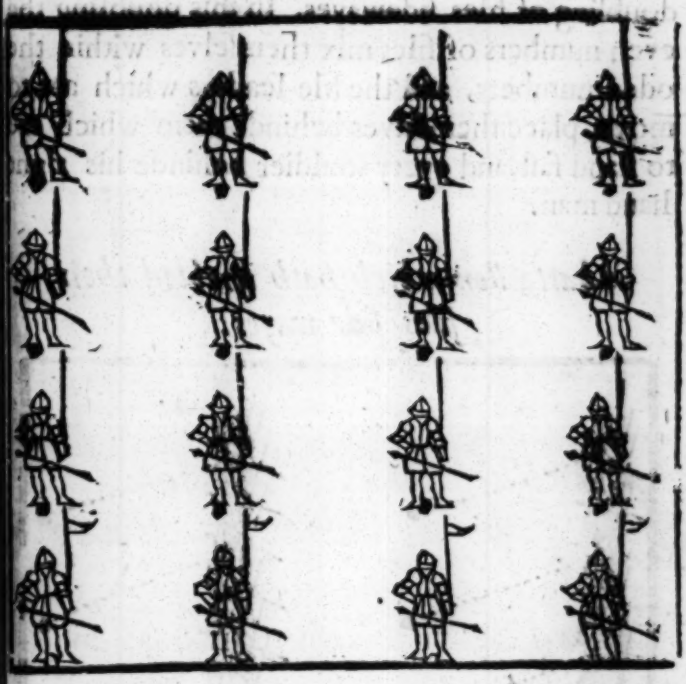
A battaillon faced to the left hand.



To

To cause the battaillon to face to the rear, every souldier must turn his face by the right hand untill it be where his back was.

A battaillon faced to the rear.

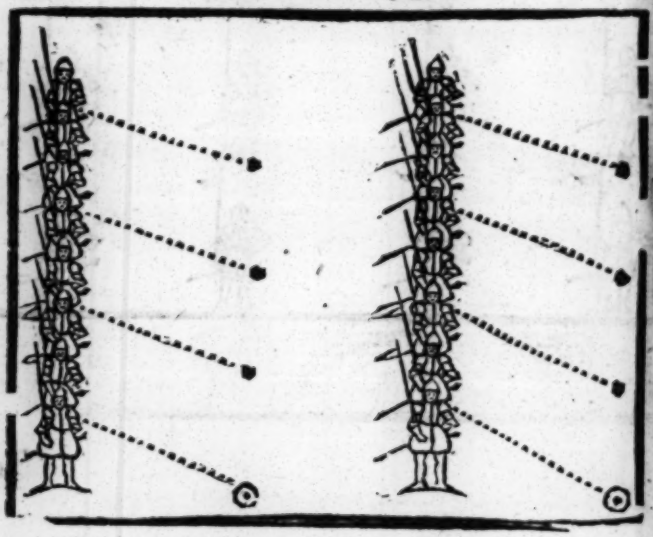


To

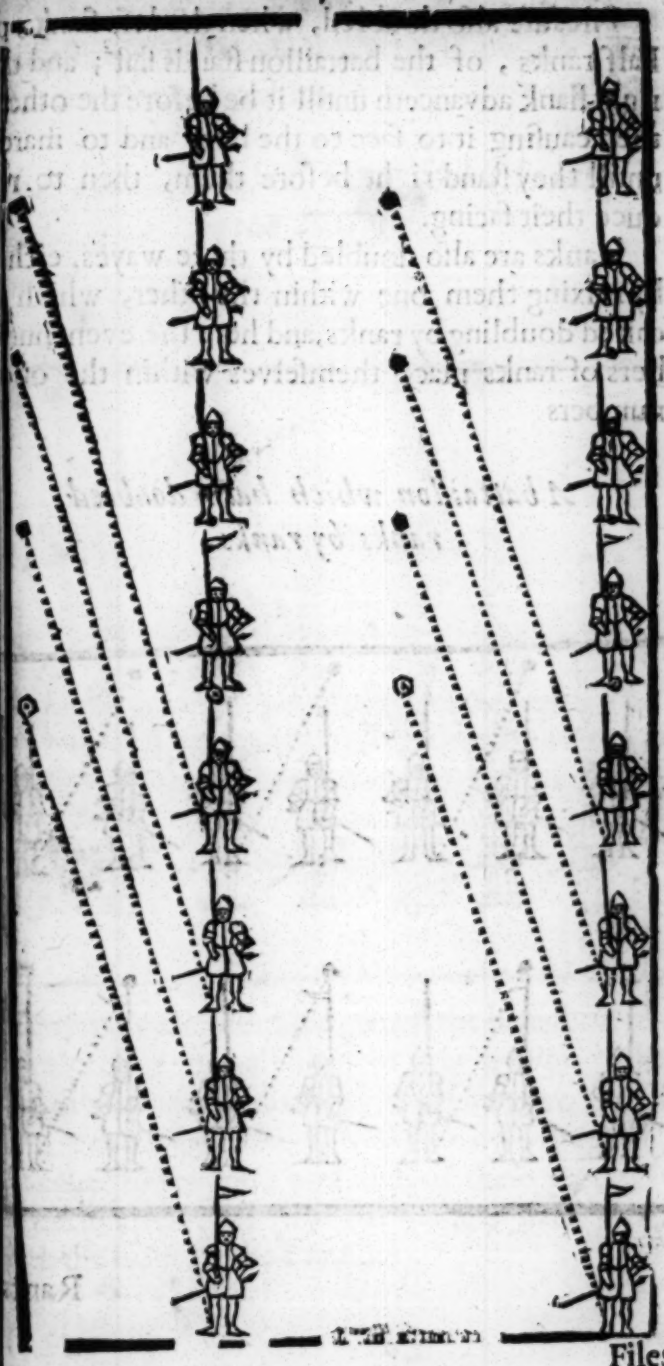
To double files or ranks, is to put two into one. Doubling of files is called doubling the flanks, or doubling the depth; doubling of ranks is called doubling the front.

Files are doubled after three wayes, either in inplacing the one within the other, which is called doubling of files sidewayes. In this doubling the even numbers of files mix themselves within the odde numbers, and the file-leaders which are to move, place themselves behinde them which are to stand fast, and every souldier behinde his right hand man.

A battaillon which hath doubled their files side-wayes.



Files are also doubled when one is placed before the other, which is called doubling of files advancing, when the odde numbers place themselves before the even numbers, as the following figure sheweth.

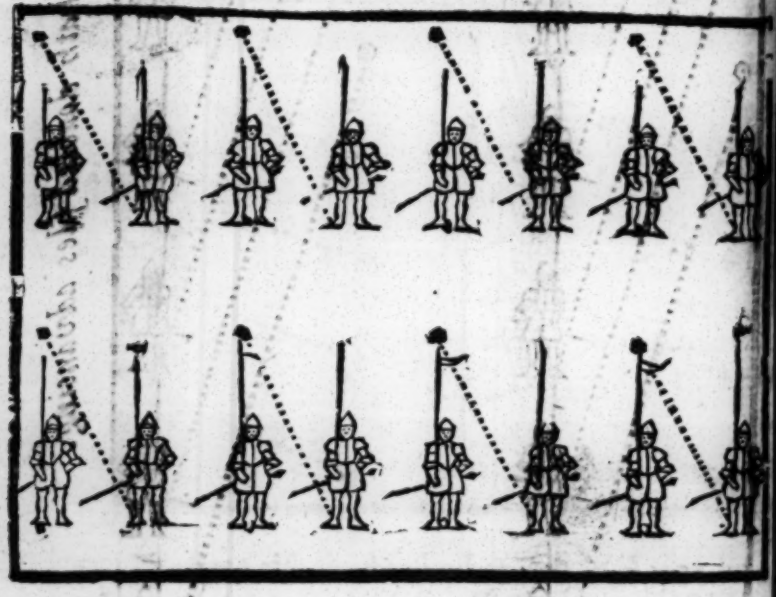


A battaillon which hath doubled files advancing.

Files are alſo doubled, when the left flank, or half ranks, of the battaillon ſtands faſt; and the right flank advanceth untill it be before the other, then cauſing it to face to the left, and to march untill they ſtand right before them, then to reduce their facing.

Ranks are alſo doubled by three wayes, either by mixing them one within the other, which is called doubling by ranks, and here the even numbers of ranks place themſelves within the odde numbers.

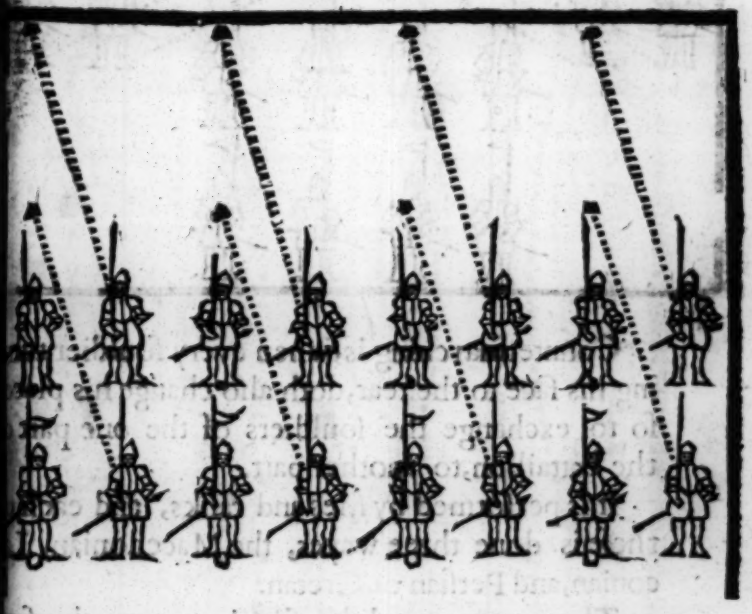
A battaillon which hath doubled ranks by ranks.



Ranks

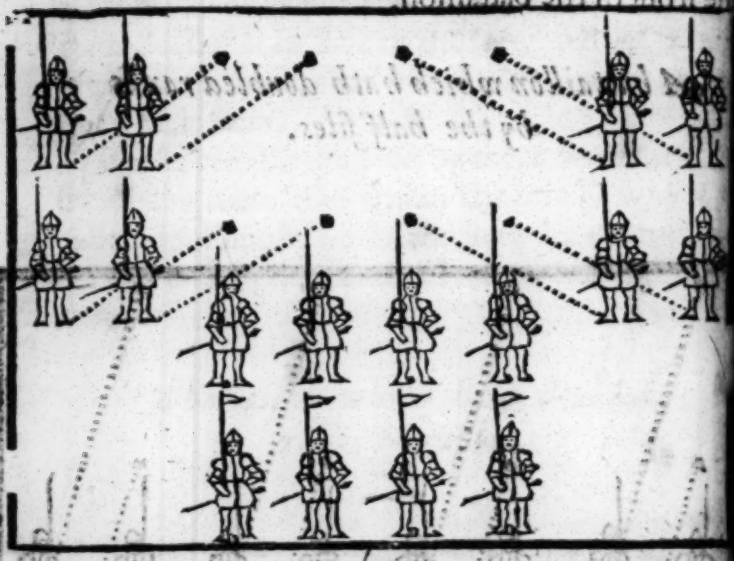
Ranks are alſo doubled, by cauſing the half files to advance, untill the half-file-leaders come up to the front of the battaillon.

A battaillon which hath doubled ranks by the half files.



Ranks are alſo doubled, when the battaillon divides it ſelf at the half files, or rear diviſion. The rear diviſion again divideth it ſelf into two equall parts at their half ranks, the one part to the right, the other to the left, and each of theſe parts advanceth untill the half-file-leaders ſtand even with the front of the battaillon.

A battaillon which hath doubled ranks on the flanks.



Countermarching is, when every ſouldier turning his face to the rear, doth alſo change his place, ſo to exchange the ſouldiers of the one part of the battaillon, to another part.

It is performed by files and ranks, and each of theſe is done three wayes, the Macedonian, Laconian, and Perſian or Cretan.

The countermarch by files is to turn the face to the rear, and ſo to bring the file-leaders again to be foremoſt.

The Macedonian countermarch by files is, when the file-leaders face to the rear and ſtand faſt, then all the reſt of each file paſſe through and ſtand behinde their own leaders, by which means the battaillon leaves before it, for the field of combat, the ground where it ſelf ſtood, as appeareth by the figure following.

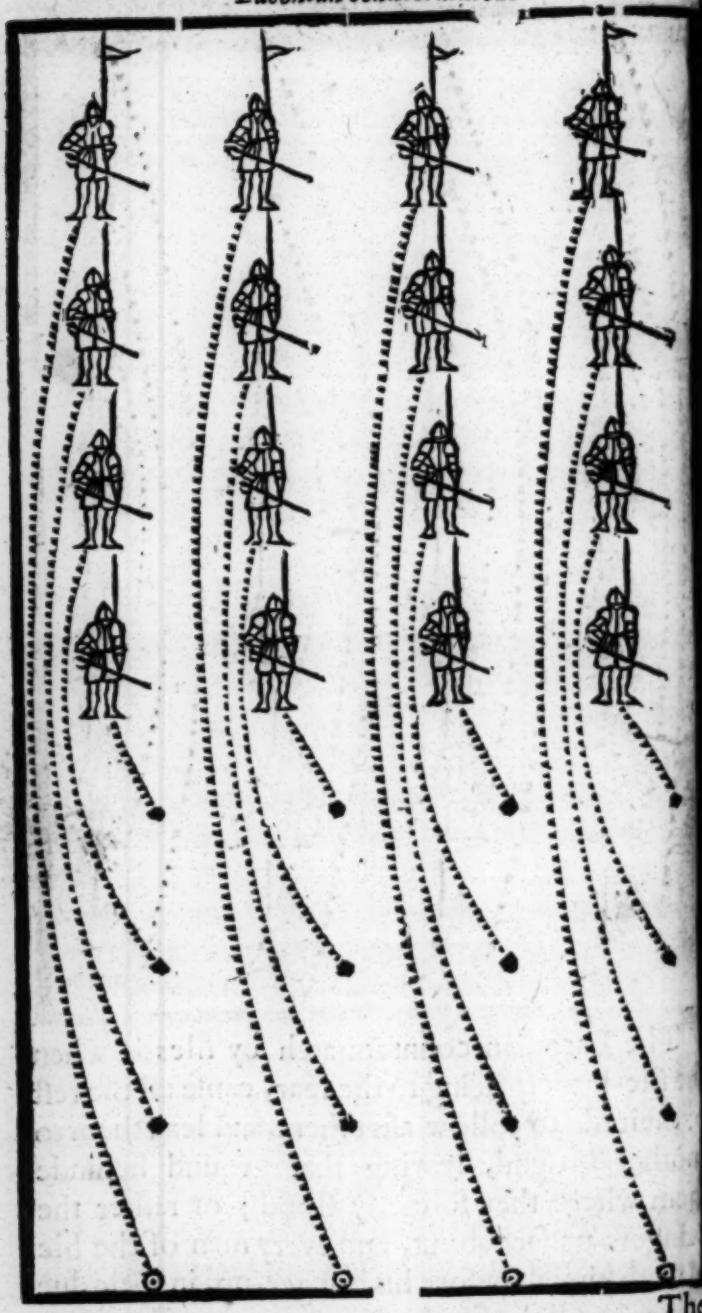
A

A battaillon which hath performed the Macedonian countermarch.



The Laconian countermarch by files is when
he file-leaders facing to the rear, cauſe all the reſt
f their file to follow after them, and lead them to
nother ground, leaving that ground behinde
em where they formerly ſtood; or rather the
ringers-up face about, and every man of the file
laceth himſelf before his bringer-up, in their due
laces, untill the file-leader come up to the front.

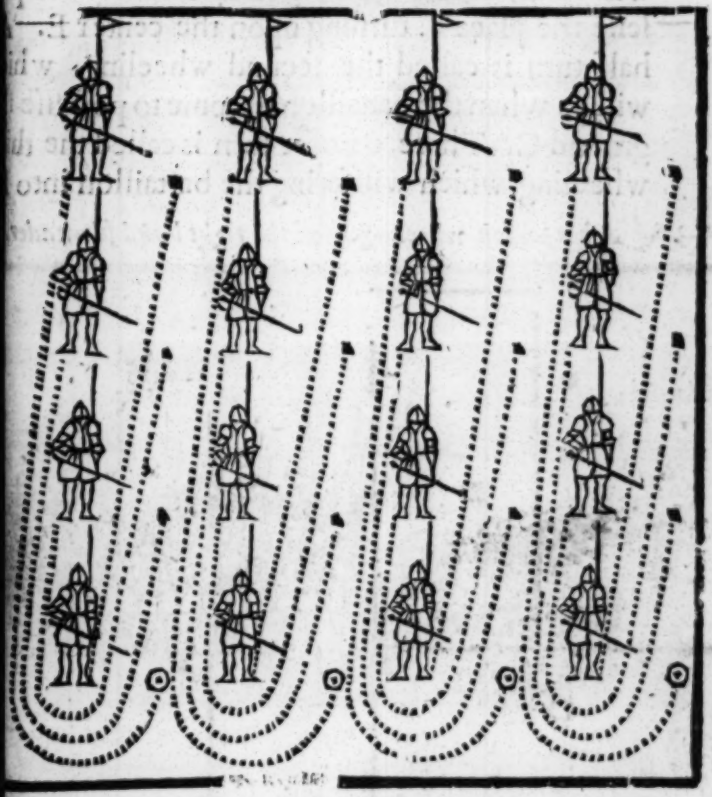
A battaillon which hath performed the Laconian countermarch.



The

The Perſian or Cretan countermarch, is when he file-leaders face about, and draw their files after them, and come into the place of the bringers-p; and the bringers-up come into the file-leaders places; the battaillon poſſeſſing the ſame ground it had before.

A battaillon which hath performed the Perſian or Cretan countermarch.



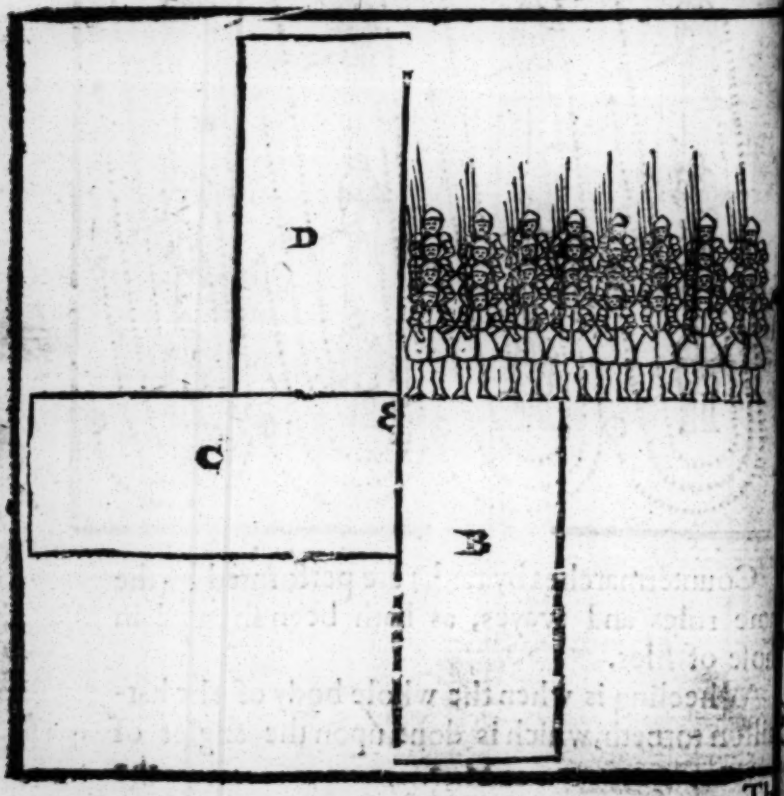
Countermarches by ranks are performed by the ſame rules and wayes, as hath been ſhewed in thoſe of files.

Wheeling is when the whole body of the battaillon turneth, which is done upon the angles of

the battaillon (upon the right or left hand file-leader) or on the middle of the front (the middle file-leaders being as the center) or on the center of the battaillon.

When the battaillon wheeleth upon the right hand file-leader, it wheeleth to the right hand. When it is upon the left hand file-leader, it wheeleth to the left. A quarter turn is called the first wheeling, as when the battaillon A. comes to possesse the place B. turning upon the center E. A half turn is called the second wheeling, which will be when the battaillon is come to possesse the ground C. Three quarter turn is called the third wheeling, which will bring the battaillon into D.

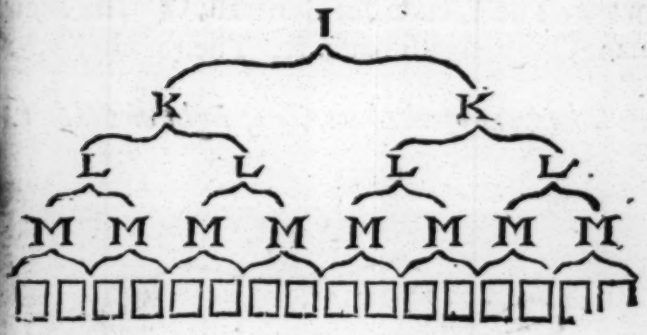
A battaillon wheeling upon the right hand file-leader.



The

The words of command are, Make ready your mes, Put your ſelves in battalia, Make even your les and ranks, Take your diſtances, Advance our pikes. Faces to the right, As you were; Faces to the left, As you were; Faces to the rear, As ou were; Files to the right double, As you were; Double your files advancing, As you were; Double your files by the half ranks, As you were; anks double by ranks, As you were; Ranks double le by the half files, As you were; Ranks double n both flanks, As you were. Countermarch, &c. s you were. Wheel, &c. As you were.

Sixteen companies made a regiment, which conſted of 4096 men; the officers of this regiment ere, one Colonell, I. two Lieutenant Colonels, . foure Sergeant majors, L. Eight Colonels aſſtants, M. The ſquares repreſent the companies, ch of them having their Captain, ▫.



Foure regiments made the battaile of heavie med foot; the two on the right hand were called e right wing, and the two on the left, the left ing.

The officers of theſe foure regiments were, the enerall of foot, N. The Lieutenants Generall, O. he regiments are, P.

The front of the battaile of heavie armed foot.



So much concerning the heavie armed foot, which differed not from the light armed concerning their order, but onely in their number, for the light armed had their files but of 8 deep, in all the reſt they were alike. For they had as many files, as many companies, as many regiments, as many officers, diſpoſed in the ſame order.

Foure regiments made the front of their battaile, and two made a wing: their commanders were, The Lieutenant Generall, Q. The Lieutenant Colonels aſſiſtants, R. The regiments, S.

The front of the battaile of light armed foot.



Sometimes the light armed foot marched before the heavie armed, ſometimes they marched on their flanks, ſometimes between them, and ſometimes in their rear.

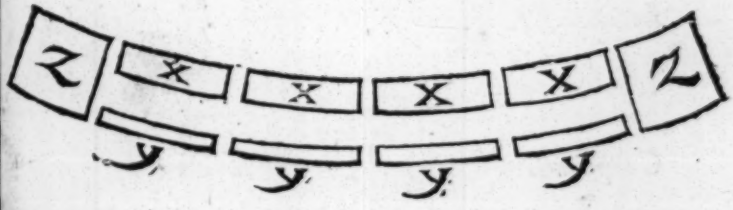
The form of battaile of the foot, when the heavie armed marched before the light armed.



T. is the left wing. V. is the right wing. X. the heavie armed regiments. Y. the light armed regiments.

The horſe were ſometimes placed round about the armie by ſquadrons, ſometimes on the wings, and alſo on the rear, ſometimes amongſt the armie in the wings of the battaillons, and ſometimes onely on the wings of the armie, which they did moſt uſually, dividing them into two equall parts, placing the one half on the right wing, and the other half on the left wing.

The form of the armie ranged in battaile, as well Infanterie as Cavallrie.



X. are the heavie armed foot. Y. the light armed foot. Z. the horſe, the one half on the right wing, and the other half on the left.

As they which uſe flying weapons were but half the number of the pikes, ſo the horſe were but half the number of thoſe which uſed flying weapons, that is, a fourth part of the foot.

The Perſians and Sicilians diſpoſed their troops of horſe in ſquare bodies, as the French do nowadayes, but the Scythians, Thracians, and Macedonians put them into a triangular form, or wedge; and the Theſſalians into a rhomb or diamond.

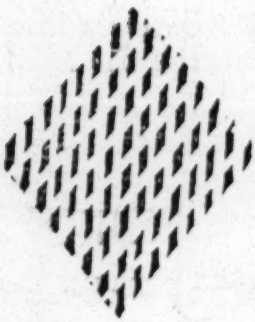
They ordered their horſe in theſe wedges and rhombs, ſometimes by files, and ſometimes by ranks, as in theſe figures.

Captain. *Ilarchos.*



Lieutenant. *Plagiophylarchos.*

Captain. *Ilarchos.*



Lieutenant. *Plagiophylarchos.*

Corporall. *Vragos.*

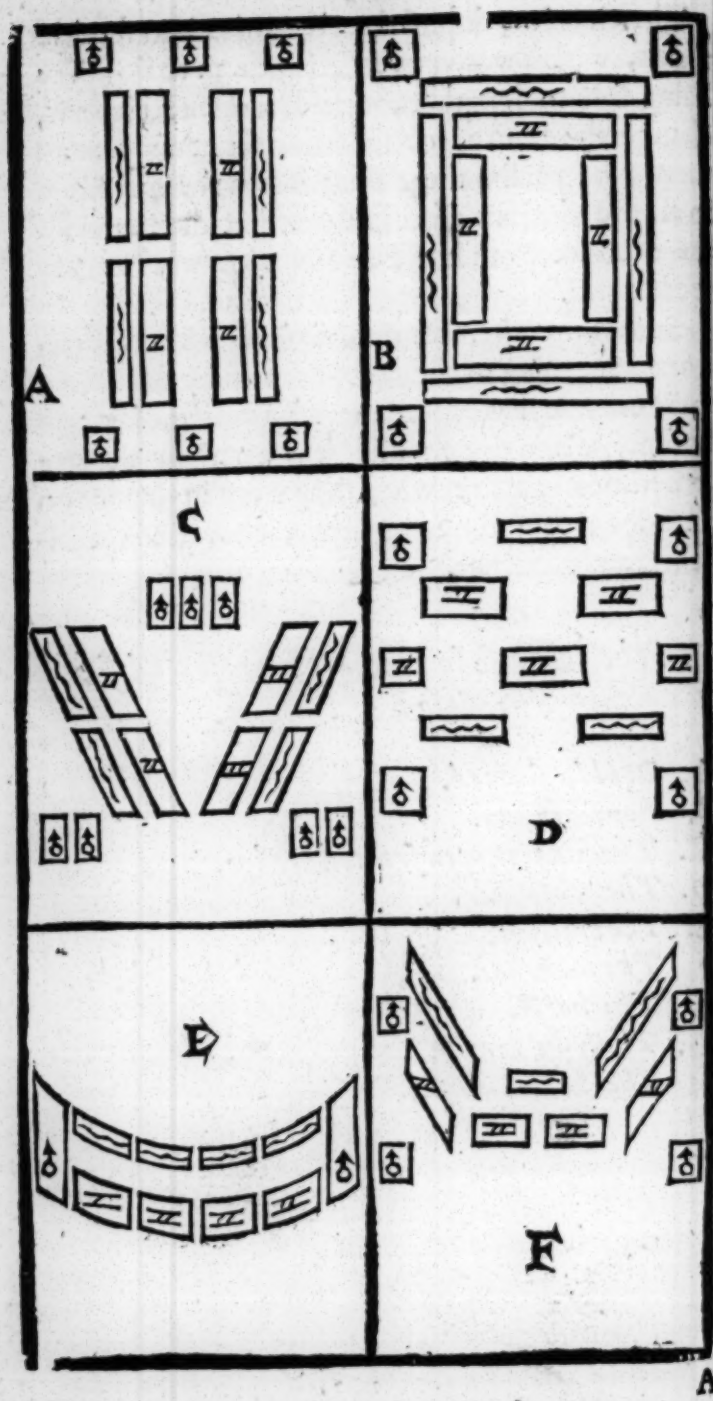
The

The Grecians disposed their armies into sundrie forms, which was very easie for them to do, they being able to lengthen, thicken, open, close it, change the figure, or turn the front as pleased them; by reason their souldiers were practised in all the motions aforesaid; and at the sound of the trumpet both horse and foot knew what they were to do.

Sometime their armie marched with an even front, according to the form shewed before, when their enemie was before them; sometimes in two bodies, when the enemie was on their flanks; sometimes in foure, when they were in danger on all sides: sometimes in sithes, checquers, crescents, and manches.

In the figure following are represented six dispositions of battaile.

A. *Double fronted.*
B. *Foure fronts.*
C. *The sithe, or open fronted wedge.*
D. *The checquer.*
E. *The crescent.*
F. *The manches.*
o. *The horse.*
m. *The light armed.*
H. *The heavie armed.*


A
B
C
D
E
F

A battaillon which had a greater depth then front, they called *Orthion*.

That which had the front exceeding the depth, *Plagion*.

That battaillon is called oblique which fighteth by the wings, one wing ſerving for the vanguard.

When the battaile was begun to be ranged by the wings, and was ended at the middle, it was called *Parembole*.

When they began to range their battaile by the midſt, and finiſhed it on the wings, it was called *Proſtaxis*.

When (the heavy armed foot being firſt placed) the light armed were placed at their front, it was called *Protaxis*.

When (after that the heavie armed were ranged) the light armed foot were placed in their rear, it was called *Epitaxis*.

When the light armed foot were ranged in the intervalls between the pikes, it was called *Entaxis*.

When the light armed were placed on the wings of the whole armie, they called it *Hypotaxis*.

of

Of the heavie armed foot, called Hoplites.

Number of men.	*Files.*	*Greek names of the troops.*	*The names interpreted.*	*Greek names of officers.*	*Officers names interpreted.*
4.		Enomotia.	A quartain.	Enomotarcha.	A quartainer.
8.		Dimœria.	An half file.	Dimœrites.	An half file-leader.
16.	1.	Lochia.	A file.	Lochagos.	A file-leader.
32.	2.	Dilochia.	Two files.	Dilochites.	A Lanſpaſſado.
64.	4.	Tetrarchia.	A ſquadron.	Tetrarcha.	A Corporall.
128.	8.	Taxiarchia.	A centurie.	Taxiarcha.	A Centurion.
256.	16.	Syntagma.	A companie.	Syntagmatarcha.	A Captain.
512.	32.	Pentacoſiarchia.	A double companie.	Pentacoſiarcha.	A Colonels aſſiſtant.
1024.	64.	Chiliarchia.	A brigado.	Chiliarcha.	A Commander of a brigado, or Sergeant major.
2048.	128.	Merarchia.	A double brigado.	Merarcha.	A Lieutenant Colonell.
4096.	256.	Phalangia.	A regiment.	Phalangarchos.	A Colonell.
8192.	512.	Diphalangia.	One wing of the regiment.	Diphalangarchos.	Lieutenant Generall of foot.
16384.	1024.	Tetraphalangia.	The battaile of the heavie armed foot.	Tetraphalangarchos.	The Generall of foot.

Of the light armed foot, called Pſyllagi.

Number of men.	*Files.*	*The Greek names of the troops.*	*The names interpreted.*	*The Greek names of the officers.*	*The officers names interpreted.*
4.		Dimœria.	Half a file.	Dimœrites.	Half file-leader.
8.	1.	Lochia.	A file.	Lochites.	A file-leader.
16.	2.	Dilochia.	Two files.	Dilochites.	A Lanſpaſſado.
32.	4.	Syſtaſis.	A ſquadron.	Syſtaſiarchos.	A Corporall.
64.	8.	Pentecontarchia.	A centurie.	Pentecontarchos.	A Centurion.
128.	16.	Hecatontarchia.	A companie.	Hecatontarchos.	A Captain.
256.	32.	Pſyllagia.	A double companie.	Pſyllagiarchos.	A Colonels aſſiſtant.
512.	64.	Xenagia.	A brigado.	Xenagiarchos.	A Sergeant major.
1024.	128.	Syſtema.	A double brigado.	Syſtemarchos.	A Lieutenant Colonell.
2048.	256.	Epixenagia.	A regiment.	Epixenagiarchos.	A Colonell.
4096.	512.	Stiphos.	One wing of the battaile.	Stipharchos.	The Sergeant major Generall of foot.
8192.	1024.	Epitagma.	The battaile of light armed foot.	Epitagmarchos.	The Lieutenant Generall of foot.

Of the horſe.

Number of men.	*The Greek names of the troops.*	*The names interpreted.*	*The Greek names of officers.*	*Officers names interpreted.*
36	Embolos.	Half a troop.	Embolarchos.	A Lieutenant.
64	Archia.	A troop.	Archos.	A Captain.
128	Epilarchia.	A double troop.	Epilarchos.	Sergeant major.
256	Tarentinarchia.	Foure troops.	Tarentinarchos.	Lieutenant Colonell.
512	Hipparchia.	A regiment.	Hipparchos.	Colonell.
1024	Ephipparchia.	A double regiment.	Ephipparchos.	Sergeant major Generall.
2048	Telarchia.	One wing of the horſe.	Telarchos.	Lieutenant Generall.
4096	Epitagma.	The groſſe of Cavallrie.	Epitagmarchos.	Generall of horſe.

Of the Romane Militia, in the time of Polybius.

Chap. XVII.

THe Romanes managed their martiall affairs after this manner : They choſe out of all the people ſuch as were moſt fit to bear armes, as well for the Infanterie as for the Cavallrie.

Concerning the Infanterie, the pooreſt and youngeſt of them were appointed to be *Velites*; the next above theſe, to be *Haſtati*; they which were in the flower of their age, to be *Principes*; and the ancienteſt to be *Triarii*.

The armes of theſe foure ſorts of ſouldiers were theſe: The *Velites* bore a ſword, a javelin or dart three foot long, and an inch thick, with an iron at the end one foot long, a target of three foot in diameter, and an head-piece of leather; ſome bore ſlings, and ſome bows.

The *Haſtati* and *Principes* bore each of them a target (two foot and an half broad, and foure foot long, or foure foot and an handfull) a ſharp-pointed ſword, and cutting on both ſides, and very ſtiff, an head-piece of braſſe with creſts and plumes, two piles of wood, the one ſlender as a dart, three cubits long, with an iron at the end; and one thick one, an handfull in thickneſſe, three cubits alſo in length, at the end whereof there was an iron of the length of the pile, half whereof was driven into the wood, which was faſtened ſtrongly thereunto, the other half extended, with a ſharp point, being furniſhed with hooks.

This

This iron, next to the wood, was one finger and an half thick, the finger being accounted at foure barly kernels, and the handfull at foure fingers breadth.

The *Triarii* bore the same armes which the *Principes* did, saving the piles, for in steed of them they bore pikes.

The *Hastati* used to bear them in former time, and had their name from thence, but they quitted them to take piles.

The *Hastati*, *Principes*, and *Triarii* bore a breast-plate of brasse or iron, a foot square; and the richer sort armed themselves with scales or mails, fastned together with hooks.

In a legion there were 4200 men of the foure sorts of souldiers aforesaid, *Velites*, *Hastati*, *Principes*, and *Triarii*; divided after this manner: There were 600 *Triarii*, 1200 *Principes*, 1200 *Hastati*, and as many *Velites*.

As well the *Hastati*, *Principes*, as *Triarii*, were divided each into ten parts, called Maniples; so that in a legion there were 30 Maniples, without reckoning the *Velites*; for they were equally distributed amongst each Maniple. The *Hastati* being 1200, divided into ten Maniples, each contained 120 men; so much were those of the *Principes*, and 60 those of the *Triarii*; and dividing the 1200 *Velites* by 30, to serve for such as used flying weapons to the Maniples aforesaid, it will appear that every Maniple of *Velites* contained 40 men.

One Maniple of *Hastati*, one Maniple of *Principes*, and one of the *Triarii* with the *Velites*, made a Cohort: for there were ten Cohorts in a Legion, and six Maniples in a Cohort; namely,

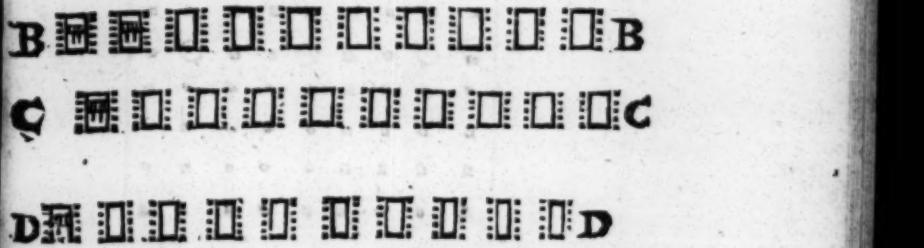
one

ge of the *Haſtati*, one of the *Principes*, one of e *Triarii*, and three of the *Velites*.

The *Velites* fought disbanded, keeping neither nk nor order, and it was their dutie to begin the irmiſh and battaile; but the *Haſtati*, *Principes*, d *Triarii*, were ranged into Maniples. All the aniples of the *Haſtati* ſtood in one front, ſo did oſe of the *Principes*, in the rear of them, and oſe of the *Triarii* in like manner in the rear of e *Principes*.

The diſtance of the Maniples was ſuch, that one aniple might ſtand betwixt two of them, becauſe at if the *Haſtati* were repulſed, they might reeat into the intervalls or ſpaces which were beeen the Maniples of the *Principes*, and ſo fight gether. And if both *Haſtati* and *Principes* were feated, they might retreat between the Maniples *Triarii*, and ſo fight again all together, as well *aſtati*, and *Principes*, as *Triarii*.

The form of a Legion embattailed.



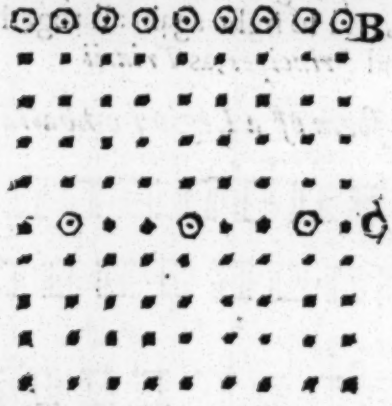
B. B. *are the Maniples of Haſtati.* C. C. *thoſe the Principes.* D. D. *thoſe of the Triarii. The ticks which are about the Maniples, repreſent the Velites.*

Over every Maniple were two commanders, lled Centurions, a firſt, and a ſecond; when both them were preſent with their Maniple, the firſt

commanded the right flank, and the second th
left: and if one of them were abſent, he which w
preſent commanded the whole Maniple. In ever
Maniple were two Enſignes, one under each Cen
turion, and two Sergeants. Every ten men had al
a commander, called a Decurion, and over all th
Legion there were ſix Tribunes or commanders i
chief.

Every Legion had 300 horſe, divided into te
troops called Turmes, every one of which had 3
ſouldiers, three whereof were Decurions or file
leaders, and three bringers-up. The firſt file-le
der, called the Prefect, commanded the troop, i
his abſence the ſecond, and in eithers abſence th
third did it. In every troop there was a Cornet.

Three Turmes in a companie.



B. *The file-leaders.*
C. *The three Cornets.*

The Romanes made uſe of their Allies in the
warres, and had a like number of foot of their A
lies as they had of citizens of Rome, and the Le
gions were alike in form, armes, and number
men: but concerning the Cavallrie, the Alli
wer

were double the number of the Romanes. It is true that of the foot they took the fifth part, and of the horſe the third part for extraordinarie, and the reſt of the foot they divided into two equall parts, which they placed on the flanks of the armie, and called thoſe on the right hand, The right wing, and thoſe on the left hand, The left wing, ſo that when the Roman Legions conſiſted of 4200 men, the wings of the Allies were 3360, and the Maniples of the *Haſtati* and *Principes*, each of them were 92; of the *Triarii* 60; and of the *Velites* 30. And the troop of extraordinarie foot in every wing was 840 men. The Cavallrie of the Allies for every of their Legions was 600 horſe (double the number of the Romanes) of theſe they took a third part (namely 200) for extraordinarie, and divided the remaining 400 into ten Turmes, each of them of 40 horſe, over which there were a Cornet, a Prefect, three Decurions or file-leaders, and three bringers-up, as amongſt the Romanes. Theſe extraordinaries were imployed for guards for the Conſuls, and for troops of reſerve in combats.

When foure Legions were ranged in battaile, all the Roman Cavallrie was on the right hand, that of the Allies on the left hand, and the extraordinarie Cavallrie of the Allies was placed on the right hand of the Roman horſe, and the extraordinarie Infanterie of the Allies was ranged between the Legions and the wings, over againſt the *Triarii*.

Foure Legions ranged in Battalia by Maniples.

A. *The Cavallrie of the two Wings of Allies.*

H. I. K. *The Haſtati, Principes, and Triarii of the firſt Roman Legion.*

E. F. G. *The Haſtati, Principes, and Triarii of the ſecond Roman Legion.*

L. M. N. *The Haſtati, Principes, and Triarii of the right wing of the Allies.*

B. C. D. *The Haſtati, Principes, and Triarii of the left wing of the Allies.*

Q. *The two extraordinarie Cohorts of the left wing of the Allies.*

R. *The 2 extraordinary Cohorts of the right wing of the Allies.*

T. *The Imperator or Generall.*

N. *The Legate of the right wing*

D. *The Legate of the left wing.*

O. *The Cavallrie of the two Roman Legions.*

P. *The extraordinarie Cavallrie of the Allies.*

When

When the Legion consisted of 4000 men, more or lesse, it was divided according to the aforesaid proportion; as when the Legion contained 5100 men, the *Velites*, *Hastati*, and *Principes*, were each of them 1500, and the Maniples of the *Hastati* and *Principes* 150. Concerning the *Triarii*, they never increased nor diminished their number of 600, nor their Maniples of 60, and the Maniples of the *Velites* were of 50 men a piece.

The Legions have oft-times been augmented; for in *Romulus* his time they contained 3000 foot and 300 horse.

In the time of *Camillus*, they were 4000 foot and 300 horse.

In *Cæsars* time, 5000 foot and 600 horse.

And in the time when the Sabines joyned themselves with the Romanes, it consisted of 6000 foot and 600 horse.

When the armie was thus strong, the Legions were ranged in battalia by Cohorts, and not by Maniples. As when *Cæsar* fought against *Afranius*, he placed in every Legion, foure Cohorts of *Hastati*, three of *Principes*, three of *Triarii*. The *Velites* were about the middle of the armie, and the horse on the flanks.

Five Legions ranged in battalia by Cohorts.

A. B. C. *Ten Cohorts of a Legion.*

D. E. F. *Ten Cohorts of another Legion.*

G. H. I. K. L. M. N. O. P. *are three other legions, each of them being divided into ten Cohorts.*

R. *The Cavallrie of Allies.*

Q. *The Roman Cavallrie.*

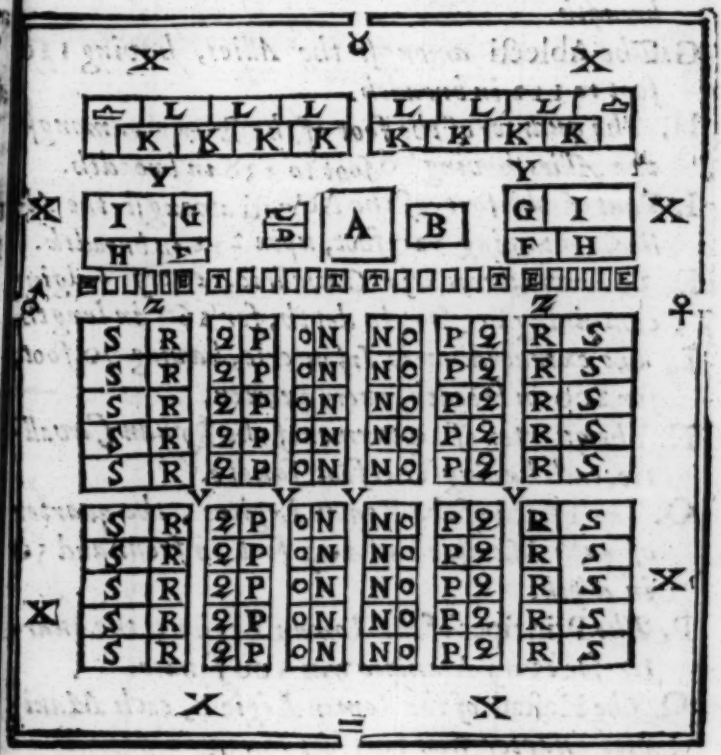
S. *The extraordinary Cavallrie of the Allies.*

T. V. *The extraordinarie Cohorts of the Allies.*

Con-

Concerning their manner of encamping, it was also such as is here shewed by a quartering of two Roman Legions. And if the armie were greater, they lengthened the camp on the right and left hand. If there were two armies together, they made two equall quarters, which they joyned on that side of the Pretorian gate.

The quartering of foure Roman Legions.



A. *The Pretorie, which contained* 200 *foot square.*
B. *The treasurie,* 200 *foot long, and* 100 *foot in depth.*

C. D. *The two Legates tents, the ground for each of which contained 50 foot in depth and 100 in length.*

E. *The Prefects over the Allies, whose lodgings were square; each side having 150 foot; their tents were 12 in all.*

T. *The Tribunes of two Roman Legions: their lodgings were square, of 150 foot aside, and 12 tents.*

F. *The lodgings of the Cavallrie of the* Evocati *amongst the Allies, having 80 foot to 125 in breadth.*

G. *The* Ablecti *amongst the Allies, having 120 foot to 112 in breadth.*

H. *The quarter of the foot of the* Evocati *amongst the Allies, having 80 foot to 238 in breadth.*

I. *That of the foot of the* Ablecti *amongst the Allies, containing 120 foot, upon 25 in breadth.*

K. *The extraordinarie Cavallrie, every lodging containing 80 foot in depth, for 167 in length.*

L. *The extraordinarie Infanterie, having 70 foot, for 200 in breadth, every quarter.*

N. *The quarter of 20 turmes of the Roman Cavallrie, each having 100 foot square.*

O. *The* Triarii *of the Roman Legions; the quarter of each Maniple had 100 foot in front and 50 in depth.*

P. *The* Principes *of the Roman Legions; the quarter for every Maniple was 100 square.*

Q. *The* Haſtati *of the Roman Legions, each Maniples quarter was 100 foot square.*

R. *The Cavallrie of the Allies; the quarter for their turmes was 34 foot in length and 100 broad.*

S. *All the Infanterie of the Legions of the Allies, every*

every Cohort having 100 foot in front and 200[a] in depth.

V. The ſtreets, being 50 foot broad.

X. The alarm-place, being 200 foot broad.

Y. Z. Two ſtreets, each of them being 100 foot broad.

g. The Pretorian gate.

ſ. The right hand gate.

ß. The left hand gate.

Ⅱ. The Decumane gate.

=. Void places reſerved to lodge ſtrangers.

[a] Obſerve that from the Decumane gate there runneth a ſtreet, which divideth the two Legions, which have all their quarters facing outward, and their backs meeting at that ſtreet, both fronting to their alarm-places X.

The

The manner of forming all ſorts of battaillons.

CHAP. XVIII.

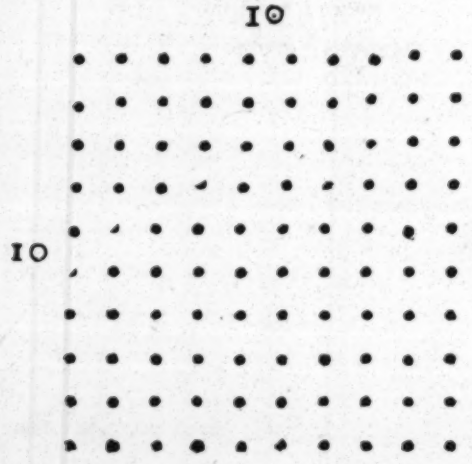
The authour followeth other writers in this chapter, which ſome (ſince) have alſo retained; but are (in my opinion) of little uſe, and ſavour of curious impertinencie.

FIve ſorts of battaillons are ordinarily made, namely, ſquare of men, ſquare of ground, doubled, when the front is to the depth according to a proportion given, and the broad fronted battallion.

The ſpace which every ſouldier requireth, marching in battalia, is three foot in front and ſeven in depth.

To make a battaillon ſquare of men.

Suppoſe the number of men be 100, take the ſquare root of 100, which is ten, which is the number of men which muſt be placed in front, and alſo in flank; As in the figure following.



To

To make a battaillon ſquare of ground.

Suppoſe the number be 105 men, multiply it three (which is the ſpace which every man occupieth in front) it will produce 315: divide this number by 7, (which is the ſpace which a man requireth in depth) it will produce 45. Take the nareſt ſquare root to this number, which is 7, and hat is the number of men which muſt ſerve for our files. After this divide your 105 men by 7, will produce 15, which is the number for the ront: ſo that this battaillon for every 7 men in ront, hath 3 in flank.

A battaillon ſquare of ground.



To

To make a doubled battaillon, that is, which hath twice as many men in front as in depth.

Suppoſe the number be 98 men, double this number, then will be 196. take the ſquare root of this number, which is fourteen, and that is the number of men which muſt be in front, and the half of that, which is ſeven, muſt be placed in the depth.

A doubled battaillon.

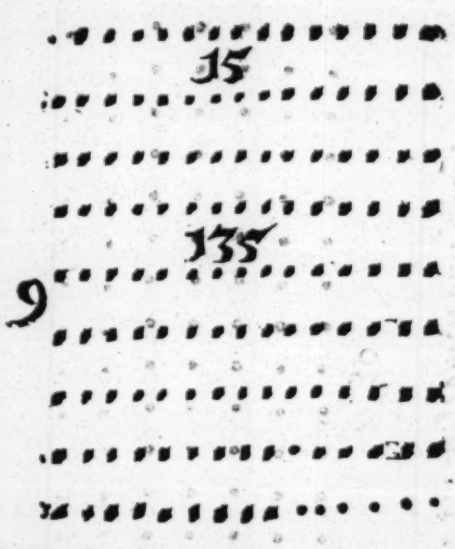


To make a battaillon whereof the front ſhall be to the depth, according to any proportion propounded.

Suppoſe the number be 135 men, to be ranged in battalia in ſuch manner, that for every 5 which ſhall be in front, there be three in depth, that is, that there be a proportion between that and the flanks, as between three and five.

Divide

Divide 135 by 5, and multiply the product by three, and of the number which it will produce, take the ſquare root, which will be nine, for the depth of the battaillon. And to finde the front, divide 135 by 3, and multiply the product by 5, and of the product take the ſquare root, which is fifteen, as in the figure following.



To make a broad fronted battaillon.

Suppoſe the number to be two hundred and ten men, whereof you would make a battaillon which ſhall have thirty men in front; to know how many there will be in depth, divide two hundred and ten by thirty, it will make ſeven. To finde the front by the depth, you muſt divide two hundred and ten by ſeven.

A broad-fronted battaillon.

The ſquare battaillons (of men or ground) are weak of front, and thoſe of broad front are weak in depth. The Spaniards often uſe doubled battaillons. And the Hollanders broad fronted ones, for they make their files no deeper then [a] ten men.

[a] *Seeing that not onely the Hollanders, but all others, make not their files to exceed the number of ten (ſome be but eight, and the Swedes uſe but ſix) to what purpoſe ſhould the ſquare root ſerve, eſpecially in a great body?*

To finde the ſquare root, to the number of 4096.

To finde the ſquare root of a number, as if you were to make a ſquare battaillon of 1600 men, looke in the table following in the column of ſquares 1600, and you ſhall finde over againſt it in the column of roots 40, for the root or number of men which muſt be placed on all ſides of the battaillon.

A table to finde the square root to the number of 4096.

Squares.	Roots.	Squares.	Roots.	Squares.	Roots.
4	2.	529	23.	1939	44.
9	3.	576	24.	2025	45.
16	4.	625	25.	2116	46.
25	5.	676	26.	2209	47.
36	6.	729	27.	2304	48.
49	7.	784	28.	2401	49.
64	8.	841	29.	2500	50.
81	9.	900	30.	2601	51.
100	10.	961	31.	2704	52.
121	11.	1024	32.	2809	53.
144	12.	1084	33.	2916	54.
169	13.	1156	34.	3025	55.
196	14.	1225	35.	3136	56.
225	15.	1296	36.	3249	57.
256	16.	1369	37.	3364	58.
289	17.	1444	38.	3481	59.
324	18.	1521	39.	3600	60.
261	19.	1600	40.	3721	61.
400	20.	1681	41.	3844	62.
441	21.	1764	42.	3969	63.
484	22.	1849	43.	4096	64.

FINIS.

Vpon the accurate tranſlation of the Lord *Du Praiſſac* his Militarie diſcourſes, done by his eſteemed friend Captain JOHN CRUSO.

TImes have their Genii: *yea; and Places too.*
For contemplation ſome are; ſome to do.
That Laurell, which ha's crown'd Aſtræa's head,
May to Bellona's *front be altered.*
Arts have their times too. In that ſeaſon ſing
The Muſes nine about their dancing ſpring:
Another while much fitter Muſick are
Thoſe ſterner arts, that teach us how to warre:
(Happie that age, that can ſo much foreſee,
To ſtudy warre in her tranquillitie.)
That Amazonian offſpring, which doth ſit
Near Pallas *ſtrength, and near* Minerva's *wit.*
Theſe teach the needfull uſe of Armes to know;
To march by their field-muſick quick, or ſlow;
To ſit down 'fore a town; T'encamp in field;
How to embattail; And how forts to build;
T'aſſault; defend; To famine; force; ſurprize;
How to releeve beſieg'd; void treacheries;
And (that which makes commanders worths grow high)
How ſtratagems to make; and how t'apply:

Of these the Lord Praiſſac *the skill hath ſhown:*
(So Greatneſſe by her vertues beſt is known)
To fortifie; To make a Canonier;
To contrive fireworks are directed here;
And, leſt th'unpractick off'cer of a Band
Should know his title, but not underſtand
His place, and dutie, he hath tane ſome pain
To teach. 'Twere hard, his labour ſhould prove vain;
And moſt induſtrious Cruſo *looſe his end,*
That to the ſtate did ſo much oyl intend.
He, that hath but the language, boldly may
Seek to tranſlate, yet is but half the way.
Who renders Sence for Sence, and Words of Art
Does properly expound, does act the Part.
Praiſſac *is well-come into England. We*
May joy in him: But yeeld our thanks to Thee.

W. Denny Eſq. Serg. Ma.

To his very worthie friend Captain John Cruso.

COuld I command an Armie forth, & train
Inventions Forces, had I a Martiall vein:
I would lay ſiege to Cenſure, and ſurpriſe
The ſtrongeſt Fortreſſe Envie could deviſe
To raiſe againſt thee, *Momus* force to yeeld,
And leave thy judgement Maſter of the field.

Hadſt

Hadſt thou vouchſafed onely to impart
The *Centaures* skill, and the *Theſſalian* Art;
Had I but known thee in thy Cavallrie
What dim-ey'd *Alian* ſpi'd not to deſcrie,
And, where *Walhauſen* faild, to bring to light
What *Baſta* wanted and the* *Malta* Knight: *Luys Melzo.*
An oath had gone for't, *Cruſo* to beget
Mars with *Minerva* inceſt did commit.
But when I further ſee the Infantrie
Commanded by thee, and th' Artillerie;
Pike, halbert, partizan, musket, carbine,
The faulcon, minion, canon, culverine:
Forts rais'd, by ſiege cities environed,
Encamped Armies, and embattailed:
Me thinks that God of warre which heretofore
(How e're Great Greece and Rome did him adore)
But an Apprentice was, at length by thee
Is Maſter of his trade, and now made free.
Nor is't ſufficient to ſet *Praiſſac's* name
Before thy book as authour to the ſame.
I know thou can'ſt not like a cipher be,
Unleſſe anothers worth to decuply.
And this thou haſt done. For it will be ſaid,
'Twas *writ* by *Praiſſac*, but by *Cruſo made*.
Nay, Poets Prophets are. In time to come
They'l ſay, Thou ſtol'ſt *France's Palladium*.
Till then I'le ſtile thee (and not think I erre)
The warlike *Hermes*, *Mars's* Interpreter.

Ri. Watſon Col. Gon. & Cai. ſoc.

Ad

Ad digniſsimum virum & de re militari optimè meritum *Johannem Cruſo*, hujus operis *Interpretem*, factâ primùm ad *Galliam* Apoſtrophe.

GAllia, *quid noſtras armato milite comples*
Oras, belligeri prodiga terra Dei?
Non ità dividuam concors alit Anglia *pacem,*
Non eſt, ut vires ambiat illa tuas.
Non ita de proprio diffidit Marte, *triumphat*
Unica præſidiis imperioſa ſuis.
Veſtra vel adverſas ſi vis juvet invida partes,
Sentiet emeritam lis rediviva manum.
Interea non culpo tuos Cruſoe *labores:*
Id dubito, ars major ſit tua ſitve fides.
Illa, vel extremi recoletur limite mundi,
Hæc intrà patriæ limina nota tuæ.
Quæ, cum per multos tranquilla quieverit annos,
Sera capit Scoticæ *pignora perfidiæ.*
At ne fortè manu infeliciter agitata rebellì
Concidat, externis militis addis opem.
Quin age, ſiqua latet Germano *ſanguine parta*
Ars, ſit & huc genii flumine ducta tui.
Imò & ab Hiſpanis *referat tua dextera bellis,*
Militiæ jactant quæ bene geſta ſuæ.
Sic olim, Angliacâ *meritos referente triumphos,*
Singula gens proprio Marte *vel* Arte *cadat.*

Guil. Sigiſwicke ſoc. Caio-Gon.

A ſhort

METHOD

FOR THE

EASIE RESOLVING

OF ANY

Militarie Queſtion

propounded.

By

The Lord of PRAISSAC.

Engliſhed by *I. C.*

CAMBRIDGE:

Printed by ROGER DANIEL, Printer
to that famous UNIVERSITIE.
1639.

To the worshipfull, my worthily honoured friend PHILIP SKIPPON Esquire, Captain of a Companie of foot, in service of the *States* of the united Provinces.

SIR,

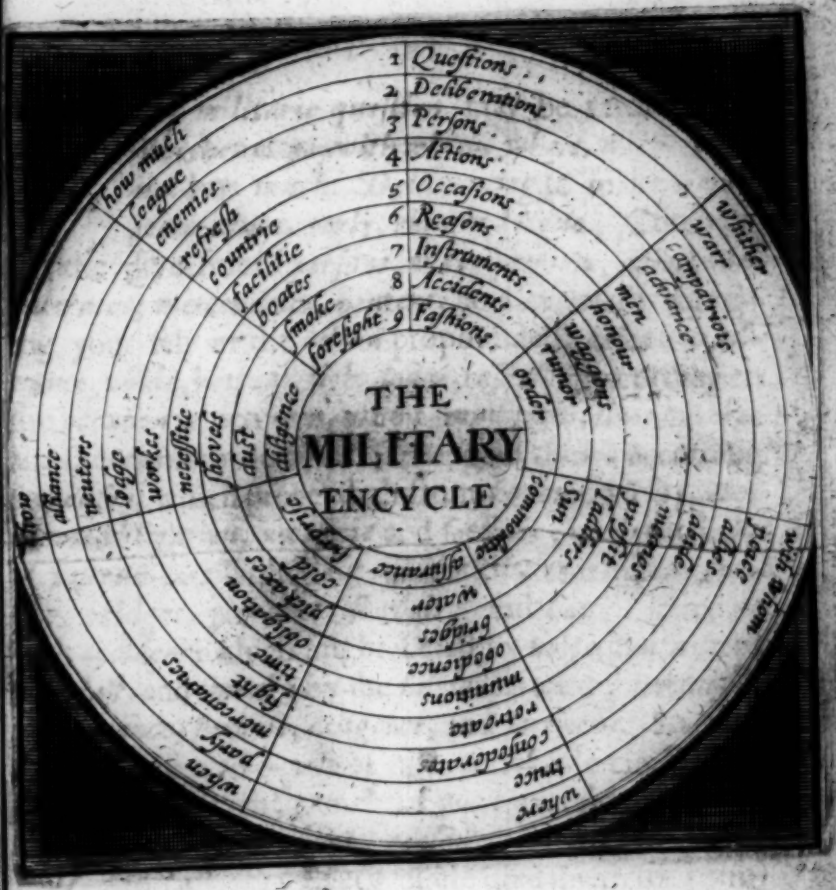
IT pleased you to put me upon the translation of the Lord of *Praissac's discourses*, and (afterwards) of this last piece of his; which I conceive he intended, as a *Corollarium* to conclude with; or as an *Epitome* of his other tractes, to put his readers to trie what they had profited by them, by setting these wheels awork. These are no speculations for every *Tyro* to meddle with; but rather for such as had followed your Worthie self in your foure and twentie years *Militia* (in *Denmark*, *Germanie*, the *Low Countries* and elsewhere) to exercise their thoughts in; and to recollect those things which might (perhaps) be slipped out of memorie. I cannot compare this piece to any thing better (for so much matter in so small a room) then to that admired artificiall *Flie*, made by that famous *German Ioan. De monte regio*, (celebrated by divine *du*

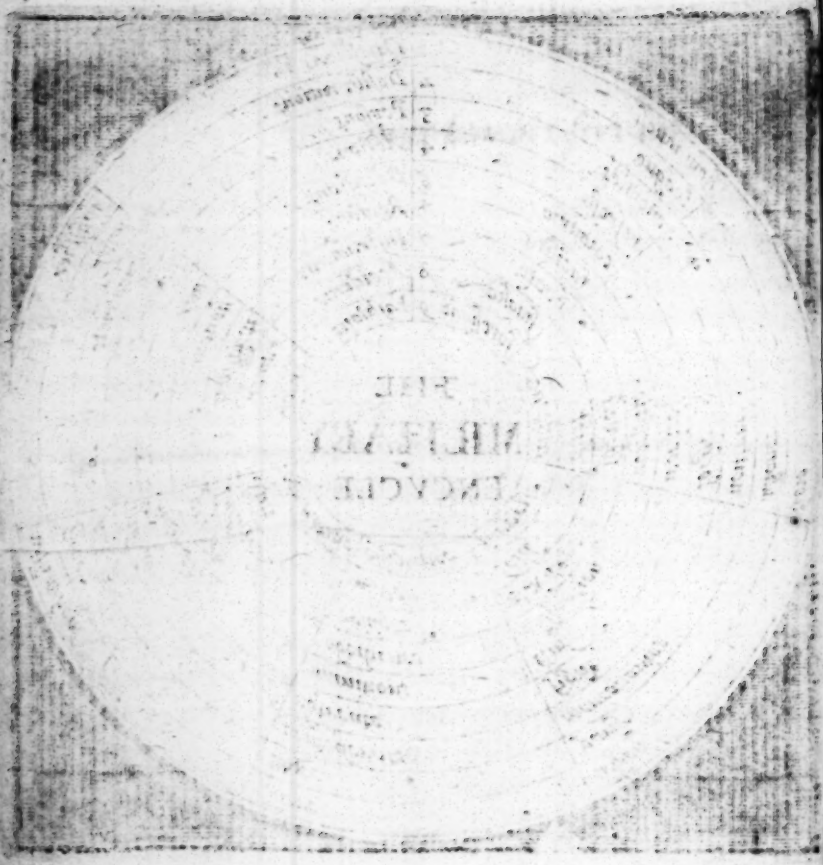
Bartas) which (not exceeding a naturall fly in bigneſſe) contained ſuch wheels, ſprings, and other engines, as made it fly from the artiſts hand round about a table, and ſo to his hand again. As little as this piece is, (and my pains in it the leaſt that may be) yet I am confident (having ſo much experience of your true candor and ſweet diſpoſition) you will dain to accept of it, from

your humble ſervant

I. C.

A


THE
MILITARY
ENCYCLE
1 Questions.
2 Deliberations.
3 Persons.
4 Actions.
5 Occasions.
6 Reasons.
7 Instruments.
8 Accidents.
9 Fashions.
whither
warr
compatriots
adherence.
men
honour
waggons
rumor
order
commodie
sum
ladders
pretext
masons
cable
axles
peace
with whom
where
truce
consideration
protracte
munitions
obedience
bridges
water
assurance
cold
fortifie
dust
diligence
shovels
workes
necessitie
lodge
neuters
distance
now
when
party
mercenaries
fight
time
obligation
pitch &c.
boates
smoke
foresight
facilitie
countrie
refresh
enemies
league
how much



A SHORT METHOD,

for the eaſie reſolving of any *Militarie queſtion* propounded.

EVery *militarie queſtion* may be reſolved by, *Whether or no, with whom, where, when, how, and how much. Deliberating* to make *warre, peace, truce, parly, alliance, league*; Conſidering the diverſitie of *perſons*, as *compatriots, allies, confederates, mercenaries, neuters*, and *enemies*; directing your ſelf in the *action* propounded, either to *advance, abide, retreat, fight, lodge, refreſh*; according to the *occaſion* which *men, means, munitions, time, works*, and the *countrey* do afford; doing all things according to *reaſon*, which proceedeth from *honour, profite, obedience, obligation, neceſſitie* and *facilitie*; uſing the help of *inſtruments* fitting for execution, as *waggons, ladders, bridges, pickaxes, ſhovels*, and *boats*; meeting with *accidents* which might befall by *noiſe, ſun, water, cold, duſt*, and *ſmoak*; by the *faſhion* of *order, commoditie, aſſurance, ſurpriſe, diligence*, and *foreſight*. So that you may make an *encycle* of nine moveable circles (as the figure ſheweth) namely of *queſtions, deliberations, perſons, actions, occaſions, reaſons, inſtruments, accidents*, and *faſhions*. Every circle containeth ſix common places, the greateſt is called the firſt, and the leaſt the ninth. If you turn the ſecond circle with a whole revolution, upon each common place of the firſt, you

ſhall finde 36 queſtions, as, *Whether you ought to make warre, whether you ought to make peace, whether you ought to make truce, whether you ought to parly, whether you ought to make alliance, whether you ought to make league. With whom you ſhould make warre, with whom you ſhould make peace, with whom you ſhould make truce, with whom you ſhould parly, with whom you ſhould make alliance, with whom you ſhould make league. Where you ſhould make warre, where you ſhould make peace, where you ſhould make truce, where you ſhould parly, where you ſhould make alliance, where you ſhould make league. When you ſhould make warre, when you ſhould make peace, when you ſhould make truce, when you ſhould parly, when you ſhould make alliance, when you ſhould make league. How you ſhould make warre, how you ſhould make peace, how you ſhould make truce, how you ſhould parly, how you ſhould make alliance, how you ſhould make league. How much you ſhould make warre, how much you ſhould make peace, how much you ſhould make truce, how much you ſhould parly, how much you ſhould make alliance, how much you ſhould make league.* And if you turn the third circle even as the ſecond, you ſhall finde that the ſaid 36 queſtions being joyned to the ſix common places of the ſaid circle, will produce 216. Namely, *Whether you ſhould make warre with your compatriots, whether you ſhould make peace with your compatriots, whether you ſhould make truce with your compatriots,* &c. Theſe 216 queſtions are reſolved by the common places of the fifth, ſixth and ninth circles.

If you have concluded to make warre, the queſtions to be propounded about the *actions* thereof, are to be taken out of the firſt and fourth circles, which will produce 36 propoſitions (as was ſaid of the firſt and

ſecond

ſecond) namely, *Whether you ought to advance forward, whether you ought to abide ſtill, whether you ought to retreat, whether you ought to fight, whether you ought to lodge, whether you ought to refreſh. With whom you ſhould advance, with whom you ſhould abide, with whom you ſhould retreat, with whom you ſhould fight, with whom you ſhould lodge, with whom you ſhould refreſh. Where you ſhould advance,* &c.

The affirmation of the 36 laſt propoſitions is taken from the common places of the fifth, ſixth, ſeventh, eighth, and ninth circles. Now, that theſe common places may be ſufficient to afford reaſons for the confirmation of theſe propoſitions, the following example will teſtifie, and will give inſtruction for the order which muſt be obſerved, for the reſolving of other queſtions propounded.

The firſt queſtion is, *Whether you ſhould make warre?* whereupon you muſt conſider of the *reaſon* which you have ſo to do; whether it be *honour*, as to conſerve your own, to maintain another, to ſettle juſtice, to puniſh evill doers. Whether it be *profit*, as to raiſe your ſtate, to augment your dignities, to gather wealth, to advance your friends. Whether it be *obedience* due to the Soveraigne, or to thoſe which himſelf or the laws have ſet over us. Whether it be *obligation*, being bound thereunto either by equitie, or oath, or conſanguinitie, or alliance. Whether it be *facilitie*, as to reſiſt the aſſaults of the enemie, to uſurpe his dominions, and to bring him under ſubjection in ſhort time, and with little charge.

Having conſidered of the *reaſon* you muſt come to the *occaſion*, which may be either in reſpect of *men*, which are either plebeians or militarie. Concerning the plebeians (if it be in a free ſtate, and not a monar-

chie) to know whether they will conſent and approve of the *action*, furniſh men for the warre, deliver places for ſecuritie, money to bear all the charges, and ſubmit themſelves to your judgement and diſcretion. Concerning the militarie men, whether they be willing to obey you, deliver you hoſtages, and put their fortunes, goods, and honours into your hands.

Now for the regard of *means*, as whether you have good ſtore of money beforehand, or means to get it, by favour of friends, or to take it from your enemies, making warre at his charge, or having good ſtore of auxiliaries from your allies, and means to pay them.

And in reſpect of *munitions*, whether you have abundance of victuall, as well for the proviſion of cities, as for the feeding of the armies, magazines well ſtored, great ſtore of draught horſes for the ready drawing of the train where it ſhall be needfull.

Or in regard of the *time*, whether it be when there is a diſſention, fomenting one of the parties; in the minoritie of the Soveraigne, inſinuating with his officers; in the midſt of a profound peace, when there is no doubt of combinations, when a great mortalitie rageth amongſt the enemies, and famine weakneth them; or when you conceive that the fear of warre will conſtrain them to give you more then you could get by it.

Or in reſpect of the *works*, whether you poſſeſſe ſtrong cities, aſſured havens, and well fortified cittadels.

Or in regard of the *countrey*, whether you poſſeſſe the ſtraits, the key ſides, bridges, that ſo you may facilitate the entrance of your relcefs, and eaſily to joyn your ſelf to them, and by that means be maſter of the field, poſſeſſing ſo much of the countrey as you are able

able to guard, and abandoning that which you could not be able to maintain, and whereof the coſt would ſurpaſſe the profit.

Concerning the *faſhion* of proceeding, it is taken from the *order* which you muſt obſerve before you execute any thing; as whether you ought to begin, or to give occaſion to the enemie to do it, in what place you ſhould give the firſt aſſault, in what ſtaple towns; and if it ſhould be ſo, how you ſhall march thither, with what quantitie of Infanterie, Cavallrie, and Artillerie you ſhould execute the enterpriſe; whether you be able to do it alone, or whether you muſt call your friends to help you; who (amongſt all) ſhall begin, who ſhall do the exploit, who ſhall conſerve that which ſhall be gotten.

Then what commoditie you ſhall reap thereby, whether you ſhall be in peace afterwards, or the nobilitie be better pleaſed, the church more flouriſhing, juſtice better adminiſtred, the people leſſe burthened, the King better ſerved, the ſtate better ſecured; what *commoditie* will facilitate the enterpriſe, will it be vicinitie, will it be the weakneſſe of the enemie, of his countrey, of his people, of his towns, of his bad councell, of his diſorder in his actions, or that you have no want of any thing.

What *Aſſurance* have you that the execution will ſucceed according to your deſire; and if that be wanting, how ſhall you aſſure your affairs; will you hazard all your fortune at a time, will you play at double or quit, or will not that which you undertake be able to hurt you but in part, or but little, or nothing at all, neither to your ſelf nor your friends.

Shall you *ſurpriſe* your enemie at unawares, keeping ill guard in his cities, or being weakly followed in the field,

field, at a time when he is ſolacing himſelf either with courting or hunting, and without being able to be advertiſed of your deſigne, untill he be fallen into your hands?

Can you by your *diligence* prevent his knowledge, and ſo your own obſtacles and his remedies?

Have you *foreſeen* whatſoever may befall you, as well in your deſigne, in the action, and after the execution thereof, to prevent the miſchief, and to advantage your ſelf by the good thereof? will your confederates be faithfull to you? If falſe, ſhall they be able to hinder the enterpriſe in the whole or onely in part, or in your very perſon, by ſeizing thereon and delivering you into the enemies hands? and if they can, by what device ſhall you be able to eſcape them? If the things aboveſaid be ſo advantageous as you ought to conclude for warre, you muſt then come to the other queſtion, *with whom you ought to make it*, whether with your *compatriots*, or with your *allies*, or *confederates*, &c. and to ſee the *reaſon*, the *occaſion*, and *faſhion* by which you ſhould proceed, paſſing through all theſe common places.

That done, you muſt handle the queſtions which concern the *action*, which are, *whether or no, with whom, where, when, how*, and *how much* you ſhall do that which you have concluded (as hath been ſhewed in the firſt queſtion:) as if a generall had cauſed his armie to be muſtered, he ſhall deliberate wherein to imploy it, as *whether* he ſhould cauſe it to *advance*, or *abide*, or *fight*, &c. Suppoſe *if he ought to cauſe his armie to march*, he ought to do it when it is to fight with the enemie, to hinder him from paſſing a champain, a river, a ſtrait, to cut off his releef; or for his own effecting of theſe things, or to beſiege ſome place,

to

o releeve it, to cut off a convoy, or to conſerve, or pil-lage the open countrey.

You muſt *advance*, when your *abiding* or *retreat* would be diſhonourable, when the hope of the *profit* is great, when ſuperiours *command* it, when alliance *oblige* you to it, when *neceſſitie* conſtrains you there-unto, and when the thing is ſo *facile* as nothing can op-poſe you.

That which will *occaſion* your moving, will be the advantage of *men*, be it on foot or horſeback; of *means*, as money, waggons, artillerie; of *munitions* both for the mouth and for warre; the commodiouſ-neſſe of *time*, fair, cold, or rain. Of the *works*, as forts, trenches, redouts. Of the *countrey*, as large, ſpacious, and even, to range your battaillons and ſquadrons; or cloſe and mountainous, to paſſe undiſcovered and ſheltred. The *inſtruments* which may facilitate the deſigne, are *waggons* to carrie the munitions; *ladders* to ſerve for ſurpriſes; *bridges* to paſſe over moats and ri-vers, *pickaxes* and *ſhovels* to make the trenches and other works, and *boats* to paſſe rivers. The *accidents* which you ought to foreſee, are the *noiſe* which hin-dreth the ſouldiers from hearing the orders, and af-frighteth them; the *ſunne*, which may dazle them; the *water* of pools, moors or rain, which may diſcom-mode you; the *cold*, which may put your ſouldiers out of caſe to fight; the *duſt* raiſed in the field by the footing; and the *ſmoak* of firings, which hinders you from ſeeing the battaillons, and the actions of the ene-mie. After that, you muſt conſider the *faſhion* of your march, what *order* your Infanterie ſhall obſerve, what your Cavallrie, and what your Artillerie; what com-moditie this marching will afford you, whether it will advantage you, and whether you ſhall be the better for

it

it in the whole or in part. Wherein your *assurance* will be, whether in your enemies being farre off, or in the strength of your site, or of the territorie, or vicinitie of friends; whether you must march upon *surprise* in the night, to pillage; with such *diligence* as you may be farre before you be discovered; *foreseeing* for all things necessarie, as to be able to make resistance, being charged; to arrive timely, before the danger; to be strongly and commodiously encamped, in such sort as you may not fear neither the surprises of the enemie, nor the violence of his assaults.

These common places may be applied as well to divers other actions as to that of warre, provided that you know which to choose, and how many.

FINIS.

5861
STC
7366.2